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Anthropometry of the Chipewyan and Cree Indians of the Neighbourhood of Lake Athabaska

BY

J. C. Boileau Grant

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ANTHROPOMETRY OF THE CHIPEWYAN AND CREE INDIANS OF THE NEIGHBOURHOOD OF LAKE ATHABASKA

INTRODUCTION

This is the second report on the physical characteristics of the North American Indians in Canada prepared by the author, who is Professor of Anatomy in the University of Manitoba, on behalf of the National Museum of Canada. The first report, for which material was collected in 1927, dealt with the Saulteaux and Cree Indians at Island lake, Gods lake, and Oxford House, northeastern Manitoba. The field work on which the present report is based was undertaken during the summer of 1928. The bands of Indians that were investigated have "reserves" (i.e., territory which by treaty is recognized as the private property of the Indians) at Fond-du-lac and Chipewyan, which lie respectively at the east and west ends of lake Athabaska, and at McMurray, Fitzgerald, and Fort Smith, which are situated on the banks of Athabaska and Slave rivers. Three of these reserves, namely Chipewyan, McMurray, and Fitzgerald, are within the province of Alberta; Fond-du-lac is in Saskatchewan, and Fort Smith is in the North West Territories.

The Indians assemble on their reserves only for very brief periods during the year; notably do they endeavour to be, as it were, at home during the few days when the agent of the Department of Indian Affairs is due to pay his annual official visit, which occasion is referred to as "treaty" or "paying treaty." At other times they are scattered over several hundreds of miles of territory, engaged, according to the season of the year, in fishing, trapping, or hunting. In consequence, opportunities of getting into close touch with any one band are practically limited to a week or two during the summer months. A few days after the agent has paid his visit to a reserve the Indians disperse; and, in the case of Fond-du-lac, the several traders also close their stores and depart, with the result that this reserve is all but deserted.

The journey to Fond-du-lac is not difficult. It may be made in relative comfort, but the opportunities of making it are few. A train leaves Edmonton once a week for Waterways (and McMurray) which is both the end of the railway and the beginning of the waterway. River boats with stern paddle-wheels sail weekly down Athabaska and Slave rivers during the few summer months the waters are not frozen. After calling at Chipewyan they follow the river, whose volume is swollen by the overflow from lake Athabaska, which lies to the east, and a few miles farther on by the entrance of Peace river which joins it from the west, and arrive at Fitzgerald. As 20 miles of rapids interrupt further navigation, a portage, which may be made by motor car, leads from Fitzgerald, which lies above the rapids, to Fort Smith, which lies below them. From Fort Smith to the Arctic ocean, a distance by water of 1,400 odd miles, the river again becomes navigable and another river-boat has time each season to make the return voyage twice. During treaty time two or

perhaps three motor-driven trading boats make the trip of 175 miles from Chipewyan to the far end of lake Athabaska, where, as its name implies, lies Fond-du-lac.[1]

Forest fires, which had destroyed the country and the timber for a distance of more than 50 miles from the lake shore, a scarcity of fish, and a severe epidemic of influenza at the time of my approach to Fond-du-lac, did not serve to make my mission popular. Having, in the meantime, fallen in with an Indian agent's party, which likewise was bound for Fond-du-lac, I attached myself to it. I remained behind at Fond-du-lac, how-

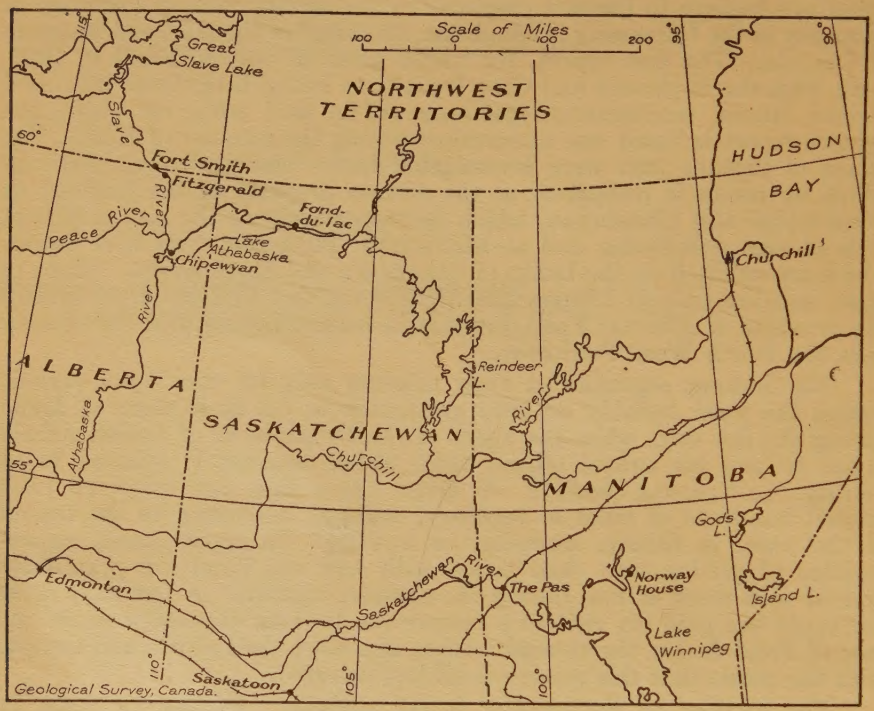

Figure 1. Index map showing Lake Athabaska region.

ever, for several days after the party had left, until finding that I should be unable to achieve fully the purpose of my journey, I decided to overtake and rejoin the agent's party, which was now en route for the reserves at Fitzgerald and Fort Smith. By doing so it seemed probable that I should glean more than by remaining where I was. I, accordingly, made my way to Chipewyan. While awaiting there the river-boat, which would take me to Fitzgerald, I found that almost every Indian had vanished, for their treaty had been paid, but this was not an entire loss to me, because before setting out for Fond-du-lac I had fortunately delayed long enough to measure them.

[1] Edmonton to Waterways..... 300 miles by rail.
Waterways to Chipewyan..... 167 " " water.
Chipewyan to Fitzgerald..... 100 " " "
Fitzgerald to Fort Smith..... 16 " " portage.
Chipewyan to Fond-du-lac..... 175 " " water.

Language and Tribe. The Indians at Fond-du-lac, Fitzgerald, and Fort Smith, and one of the two bands at Chipewyan are Chipewyan Indians; they belong to the Déné, or northern Athapascan stock. The Indians of the other band at Chipewyan are Cree; they belong to the Algonquian stock.

The length of lake Athabaska separates the reserve of the Indians at Fond-du-lac from the great waterway (Athabaska, Slave, and Mackenzie rivers) which connects the north with the south; and, in consequence, the Indians on this reserve might be expected to have had less intercourse with Europeans than had the other bands whose reserves are on the banks of this waterway. These Fond-du-lac Indians are, however, said to be very closely related to the Chipewyan Indians whose reserve is at Churchill, which is situated about 450 miles eastwards on Churchill river near where it debouches into Hudson bay. On or near this latter site the Hudson's Bay Company has had a trading post since the year 1672. The original post was replaced in 1733 by a fortress, Fort Prince of Wales, now probably the largest ruin in North America; for despite its thick walls and forty odd cannon, it mysteriously capitulated in 1782 to Admiral La Perouse, who dismantled it. But at one site or another the Hudson's Bay Company has been in almost uninterrupted occupation of the mouth of Churchill river since the year 1672. To this trading post the Chipewyan Indians used, in early days, to bring their furs. Even after the great waterway had been opened up, and Chipewyan established, by McKenzie on behalf of the Northwest Company in 1789, many Indians still preferred making the long, tedious journey to the mouth of Churchill river, there to barter their furs, to disposing of them at Chipewyan. Churchill has ever remained an isolated outpost. Churchill river has never yet been a thoroughfare and therein it differs from the great waterway. It is probably not important to draw attention to the fact that one or two fur traders are known to have visited, and various *coureurs de bois* to have traded with, the Indians in the Athabaska region before McKenzie's time, because it is likely that most of the intermarriage between Indians and Europeans has taken place in more recent days.

At Chipewyan there are two contiguous reserves; one for Chipewyans, the other for Crees. And, from what has been said concerning the location of these two reserves one would expect the Indians on them to be less pure than those at Fond-du-lac. Local opinion, however, would have it that these Crees are relatively pure; that they have much less mixed blood than the neighbouring Chipewyans and less even than the Chipewyans at Fond-du-lac. This on account of the fact that they have been very particular in the past in avoiding the posts of the white traders.

Many of the Chipewyan Indians at Fitzgerald and Fort Smith and a large proportion of the Indians at McMurray are quite obviously of mixed origin, the exotic blood being probably more largely French than British; a few are blended with Cree.

The pure Chipewyan Indians speak Chipewyan and Chipewyan only; few of them understand any English, French, or Cree. The Cree Indians speak no Chipewyan. In fact, Cree and Chipewyan Indians trading at Chipewyan cannot understand each other, on account of which the stores employ two interpreters.

Methods

The same instruments were used as in the work of 1927 in northeastern Manitoba, namely, an anthropometer, calipers, and sliding compass made by Hermann, and an additional measuring rod. A surveyor's spirit-level, attached to the measuring rod, insured that it was held perpendicularly, and replaced the plumb lines employed last year. With the exception of the arm stretch in the case of the men, and of the arm stretch and the proportions of the ear in the case of the women—which were omitted because the subjects were neither too willing nor too submissive—the same observations were made and the same measurements were taken as last year. All measurements were recorded by myself on prepared blank forms. They were taken a second time, and in this way were checked. If there was an appreciable difference between the two readings (i.e., 1·0 cm. insofar as stature and sitting height were concerned; 1·0 mm. for other measurements) a third and at times a fourth was taken. In the case of the soft parts, nose, upper lip, mouth, ear, and hand, it was usual to take only one reading.

In addition to these observations and measurements samples of blood were taken for grouping purposes. But, as the taking of even a drop of blood deterred a number from coming forward, caused others to avoid me, and others openly to refuse to be measured, it was made known that the women's blood would not be required.

For blood sampling the following equipment was taken into the field: 400 ($3 \times \frac{1}{3}$ inches) test tubes half filled with formalin citrate solution,[1] sterilized, corked, and sealed with paraffin wax; freshly collected and strongly active samples of blood serum belonging to groups 2 and 3 put up in phials; a thousand or more 4-inch lengths of finely drawn glass tubing, sterilized and packed in wide test tubes, served as capillary pipettes; one dozen microscope slides having the figure 2 scratched on one end and the figure 3 on the other; a file to open the serum phials; plasticene to support the phials and tubes while making the tests; a lancet with concealed spring blade; a sharpening stone; gauze and methylated spirits, to sterilize the lancet and clean the skin.

The thumb, after being rubbed with gauze soaked in spirit, was stabbed on the back of the terminal phalanx, and one or two drops of blood were collected by inverting a tube of formalin-citrate solution over the drop. The tube was recorked and the serial number of the subject written on the adhesive label on the tube. A drop of serum 2, and a drop of serum 3, making use of a separate pipette for each, were transferred to the correspondingly marked ends of a microscope slide placed on a sheet of white paper. With a third pipette a drop of blood, in citrate solution, was added to the serum at each end of the slide (contamination being avoided). The serum and blood citrate solution were mixed by agitating the slide. The appearance of a fine brick dust (cayenne pepper) precipitate, visible to the naked eye, was regarded as a positive reaction. A test was not regarded as negative until at least twenty minutes had elapsed, unless the slide had in the meantime been agitated, and unless a smoky appearance had been produced. Eight blood samples from Chipewyan did not give a positive

[1] Snyder, L. H.: "Human Blood Groups"; Am. Jour. of Phys. Anthropology, vol. IX (1926).

reaction, neither did they give a definitely negative one, i.e., a cloudiness could not be produced either by the addition of more blood or of more serum, or by prolonged agitation, or even by repeating the test. This was attributed to the fact that these samples were too dilute. These eight are not included in the data. These naked eye tests were made in the field, generally within a few hours of collecting the sample, and invariably within the space of forty-eight hours. On my return to Winnipeg, which was within six weeks of taking the first sample of blood and within a fortnight of the last, all samples were subjected to a microscopical test by an experienced technician. He employed the unused sera brought back from the field, for they were found to be still very active.

It is worthy of note that though twenty-one positive naked eye reactions were obtained in the field, I was unable on my return to Winnipeg to reproduce any one of these in the laboratory, nor, except in three instances, did the technician, who was controlling my findings, observe under the microscope any agglutination of cells. The three samples he found to react were among the last taken. He re-tested these daily for a week, by the end of which time each of the three had ceased to respond. This was explained by the fact that every specimen was completely or partly haemolysed, as could be seen from a naked eye inspection of the blood samples.

In order to determine whether or not haemolysis would take place under slightly more favourable circumstances samples of blood from individuals belonging to groups 2 and 3 were collected in tubes of formalin citrate solution obtained from different sources. These were placed exposed to light on the laboratory shelf, on November 19, 1928, and were examined at intervals of one week. One set failed to agglutinate by January 9, 1929, the other by January 21, 1929; that is, within a period of two months after collection. It would appear from this that it is prudent to test samples as soon after collection as possible, which usually is while still in the field.

Material

In all, observations were made on two hundred and thirteen Indians, who were distributed as follows:

Adult and Old Male Chipewyan Indians

Fond-du-lac	Adult (ages 20-59 years)	33
	Old (ages 60 years and over)	0
	Total number examined	33

i.e., 38 per cent of the total adult male population of 87.

Chipewyan	Adult (ages 20-59 years)	15
	Old (ages 60 years and over)	6
	Total number examined	21

i.e., 31 per cent of the total adult male population of 67.

Fitzgerald and Fort Smith	Adult (ages 20-59 years)	24
	Old (ages 60 years and over)	0
	Total number examined	24

i.e., 50 per cent of the total adult male population of 48.

Adult and Old Male Cree Indians

Chipewyan	Adult (ages 20-59 years)	25	
	Old (ages 60 years and over)	6	
	Total number examined	31	

i.e., 69 per cent of the total adult male population of 45.

Adult and Old Female Chipewyan Indians

Fond-du-lac	Adult (ages 20-59 years)	21	
	Old (ages 60 years and over)	0	
	Total number examined	21	

i.e., 22 per cent of the total adult female population of 94.

Various other adult and old male and female Indians, pure and breed, especially from Waterways and McMurray	30	
Total number of adults and old persons examined		160
Boys, pure and breed Indians (ages 10-19 years)	25	
Girls, " " (ages 10-19 years)	28	
Total number of children under 20 years examined		53
Total number of individuals examined		213

From these bands 44 adult male Indians (ages 20-59 years) have been selected as being, on the evidence of the interpreters, pure Indians.

From these bands 22 adult male Indians (ages 20-59 years) have been selected as being, either on their own statement or on the evidence of the interpreters, Chipewyan-white breeds.

Ages. The ages of the adults and of the old people are, no doubt, only approximately accurate. We endeavoured not to include in the adult group any who appeared to be under 20 or over 59 years of age; that is to say, in doubtful cases the interpreter was urged to attempt to extract the correct age. The Mother Superior of the orphanage at Chipewyan, who very courteously allowed the children in her charge to be examined, was able to supply accurate details of age and also of stock of these children.

Grouping and Treatment of Material. The individuals are arranged in groups according to the band to which they belong, i.e., according to the reserve at which they were paid their treaty money. On account of the fact that children, old people, Cree-white breeds, and Chipewyan-Cree breeds were not obtained in sufficient numbers to be treated statistically, they are referred to only occasionally, as for example, when considering such characters as the colour of the eye, or the blood grouping; but the data concerning them are made available in the appendix. Three adult Crees (Nos. 32, 33, and 34) were encountered at Fitzgerald, but as they had recently belonged to the band at Chipewyan, they are considered with this band.

There can be no doubt that in each band there is a certain admixture of European blood. To discover, therefore, the average descriptive characters and physical proportions of pure Chipewyan Indians a sufficient number of those who are undoubtedly pure must be extracted from the

different bands and then treated collectively. Rather than be guided—or misguided—in this selection by my own personal opinion, which would naturally be prejudiced against any who did not possess typical features, I have preferred to rely upon the decision of the different interpreters, even though at times it was not in accord with my own opinion on the matter.

The interpreters were able from their personal acquaintance with the Indians and from the knowledge of their family histories to indicate 44 adult male Chipewyans whom they felt convinced were absolutely pure. (From F-d-l, 18; Ch., 11; F. and F. S., 12; McM., 3; making a total of 44.) Again, 22 were extracted because on their own or on their interpreters' evidence they were Chipewyan-white breeds. (From F-d-l, 3; Ch., 2; F. and F.S., 7; McM., 10; making a total of 22.) The 22 may, I think, be unhesitatingly accepted as Chipewyan-white breeds; concerning the 44, assumed to be pure Chipewyan, it seems probable, now that the report is worked up, that the judgments of the interpreters have proved fallible, for it seems doubtful if the 44 men they selected as pure, are any more pure than the 33 men of the Fond-du-lac band who were induced to be measured, and who were taken at random.

Abbreviations

F-d-l refers to Fond-du-Lac.
Ch. refers to Chipewyan (Chipewyan reserve).
F. and F.S. refer to Fitzgerald and Fort Smith.
McM. refers to McMurray.

The numbers in brackets in the text are the serial numbers of the individuals referred to, and if the appropriate appendix on page 47 et seq. be consulted, full details of these individuals will be found.

In the Frequency Distribution Tables:
Mean refers to average.
σ refers to standard deviation.
E_m refers to probable error of the mean.
V refers to coefficient of variation.
No. refers to number of cases examined.
Diff. refers to the numerical difference between two measurements.
P.E.diff. refers to probable error of the difference.

DESCRIPTIVE CHARACTERS

The impression one formed of the colour of the skin of the face of these Indians was, that it did not in general differ from that of other North American Indians, which is to say, it was medium or dark brown. In the case of the half-breeds, it was lighter, as would be expected. Several of the men at Fitzgerald and Fort Smith, who were affirmed to be pure, certainly seemed to be a little lacking in colour; and, on the whole, one would have expected the women of Fond-du-lac to have been a little darker than they were. No colour scale was employed.

The hair of the head was straight and black. In a number, especially among the Cree, it was slightly wavy over the region of the forehead. It varied in texture from coarse to fine, as is shown in the accompanying table. In none was it very coarse and bristly and only in one old man (Cree 22) was it very fine and silky. It will be observed that the largest percentage of coarse hair was found among those whom the interpreter considered to be pure Indians; that the Cree and breeds have the least coarse hair; that the women have finer hair than the men.

TABLE I

Quality of the Hair of the Head

	Tribe	Band	Coarse	Medium	Fine	Number examined
			%	%	%	
Men	Chipewyan	Fond-du-lac	53	47	.....	30
		Chipewyan	43	36	21	14
		Fitzgerald and Fort Smith	45	55	.....	20
	Cree	Chipewyan	30	61	9	23
	Assumed pure Chipewyan		56·5	38·5	5	39
	" Chipewyan-white breeds		26	58	16	19
Chipewyan women		Fond-du-lac	9·5	62	28·5	21

Though no one was bald two men had very little hair on the crown of the head. One (Ch. 5) looked like a pure Indian, but as his children are said to look like white children and his cephalo-facial index is 92·5 it is probable that he has some white blood. The other man (McM. 16) was definitely a half-breed with greyish eyes and cephalo-facial index of 90·7. Our findings, therefore, both this year and last year, indicate that baldness or a tendency to baldness is only found in Indians possessing some European blood.

Notes were made on the quantities of hair on the upper lip, chin, and cheek; whether it was totally lacking, or if present, whether in scanty, appreciable, marked, or very marked degree. These findings are recorded in percentages in the accompanying table.

Table II

Quantity of Hair on the Face

Tribe	Band	Moustache				Beard				Hair on cheeks				Number examined
		Absent	Very scanty	Appreciable	Marked in amount	Absent	Very scanty	Appreciable	Marked in amount	Absent	Very scanty	Appreciable	Marked in amount	
		%	%	%	%	%	%	%	%	%	%	%	%	
Chipewyan.....	Fond-du-lac.....	27	58	15	....	45·5	51·5	3	....	97	3	....	....	33
	Chipewyan.....	13	27	40	20	13	67	20	....	93	7	....	....	15
	Fitzgerald and Fort Smith.....	12·5	37·5	37·5	12·5	12·5	46	33	8	78	13	4·5	4·5	24
Cree.....	Chipewyan.....	30·5	61	4	4	43·5	56·5	....	....	92	8	....	....	24
Assumed pure Chipewyan.....		18	45·5	32	4·5	27	55	18	....	95	5	....	....	44
" Chipewyan-white breeds...		9	36	32	23	13·5	41	32	13·5	59	27·5	4·5	9	22

It would appear that the Chipewyans at Fond-du-lac were the least hairy, having even less hair than those assumed to be pure; and, that the Crees, the Chipewyans at Chipewyan, Fitzgerald, and Fort Smith, and then the breeds, had, in that order, increasingly more hair on the face.

To possess a quantity of grey hair was the lot of everyone over sixty. Most of those whose ages were given as fifty to sixty had some grey hairs, and occasionally on the heads of those who were round about thirty years of age a few grey hairs were to be observed. The data on this are recorded in the appendix.

Nose. Though noses were of all shapes, the clear cut, aquiline type was rarely seen. Many—the majority in fact—were convex, though the convexity was not as a rule pronounced. The fact that the point or tip of many noses was somewhat enlarged, with the result that a slight concavity of the bridge preceded the enlargement, was responsible for many of those described as concave, and for the concave factor in those designated concavo-convex. The accompanying histogram, which is constructed on a percentage basis, demonstrates that the convex nose is the type that predominates among the Chipewyan males, and that the concave element occurs least often among the Fond-du-lac and pure Chipewyan men and that it increases progressively among Chipewyan, Fitzgerald, and Chipewyan-white breeds. Among the females it is more usual to have a concave element than not.

In the distribution of the shapes of the noses of the Crees examined this year at Chipewyan and of the Crees investigated last year at Oxford House there is no great contrast; neither is there much difference in the distribution of the shapes of the noses of the Chipewyan women examined this year at Fond-du-lac and the Saulteaux women examined last year at Island lake.

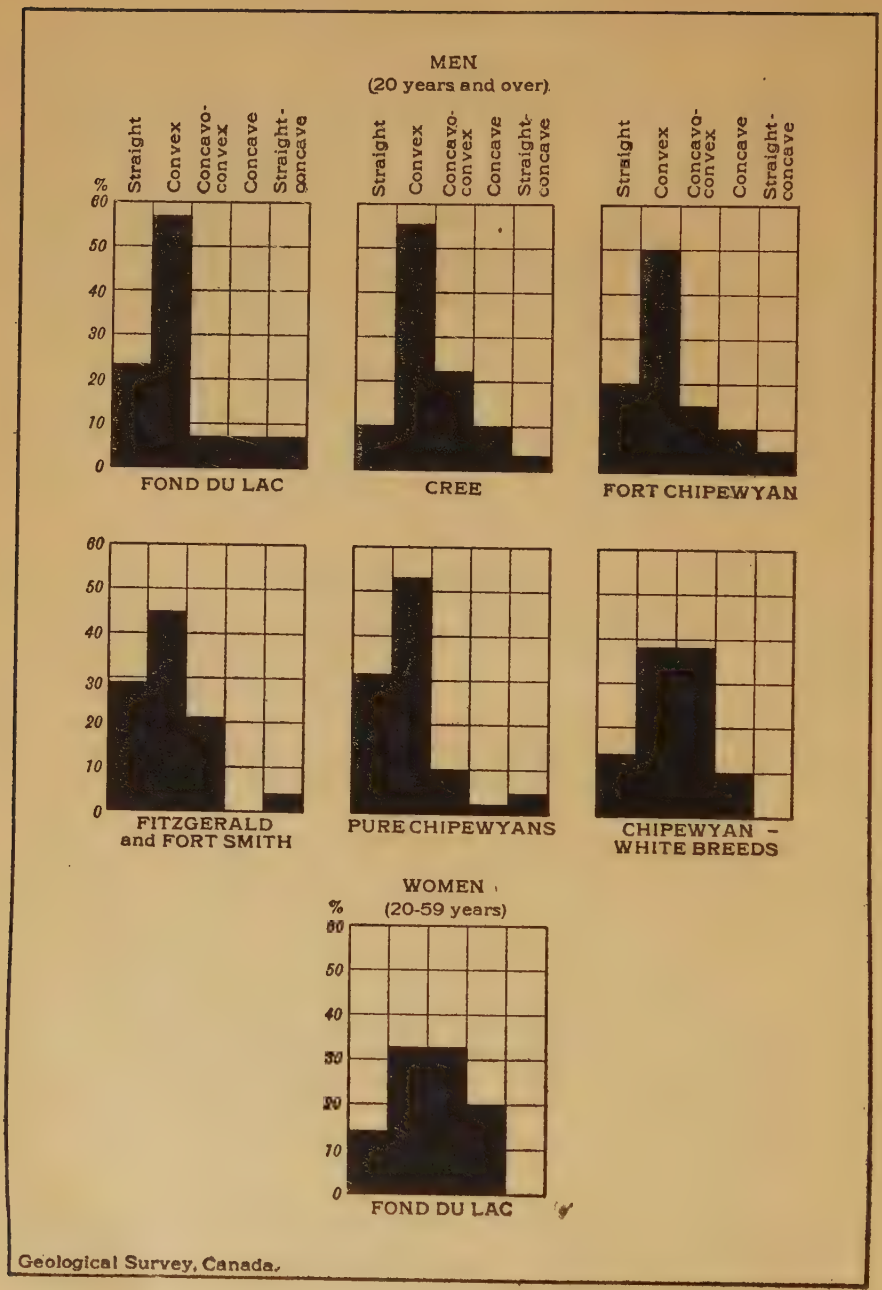

Figure 2. Percentage distribution of the shape of the nose.

The lateral palpebral canthus is definitely noted as being higher than the medial canthus in ten men at Fond-du-lac; ten men at Chipewyan; and in nineteen Crees; many omissions were, however, made in recording this feature. The details of the colour of the eye (iris) are set out in graphic form in Figure 3. As they were not matched for colour against any standard, they can—despite the fact that care was taken in obtaining them—only express a personal estimate of the colour distribution. An endeavour was made to separate the eyes into six classes: black, dark brown, dark to medium brown, medium brown, medium to light brown, and grey (including blue or greenish grey). It is apparent from the histogram:

(1) That the women at Fond-du-lac have darker eyes than have any of the groups of men;
(2) That in diminishing order of darkness among the men come the Cree, followed by the Fond-du-lac band, assumedly pure Chipewyans, the Chipewyan band, the Fitzgerald band, and the Chipewyan-white breeds;
(3) That if darkness of eye is an index of purity of stock, then the above should be the order of purity;
(4) And, therefore, that the Fond-du-lac band of Chipewyans are more pure than those selected as "pure Chipewyans," and that the acknowledged "Chipewyan-white breeds" are hardly more mixed than the Fitzgerald band of Indians;
(5) And, that on this basis the girls who are said to be pure Indians quite likely are pure, but the same is not true of the boys;
(6) That the girls and boys who are undoubtedly breeds may, nevertheless, have dark brown eyes and that the girls have a larger percentage of dark eyes than the boys.

Contrasted with those examined last year, the Chipewyans at Fond-du-lac (male and female) have darker eyes than the Saulteaux and Cree (male and female) at Island lake, and the Crees examined this year at Chipewyan have much darker eyes than the Crees examined last year at Oxford House.

Arcus senilis. The eyes of sixteen persons presented the condition known as arcus senilis. Of these, eight were between the ages of forty-seven and sixty years, and eight were over sixty years of age. (F-d-l, 72, 77, and 81; Ch., 9, 15, 16, 18, and 19; F. and F.S., 1 and 11; Crees, 4, 6, 15, 22, 26, and 28.)

Pterygium, with or without *Pannus.* This affliction of the conjunctiva, so common in the north, was met with in six persons: four being Crees and two Chipewyans. (Cree, 4, 17, 18, and 29; Ch., 2 and 15.)

The *digital formula* was, in all but nine cases, of the primitive type, i.e., the middle finger is the longest or most projecting, then in succeeding order of length or projection follow the ring, index, little finger, and thumb. The formula thus reads $3>4>2>5>1$, and is common to the Primate stock. It is said—and my small experience confirms it—that in 10 per cent of white persons the index projects beyond the ring finger. Of the 213 Indians, men, women, and children, investigated this year, in only

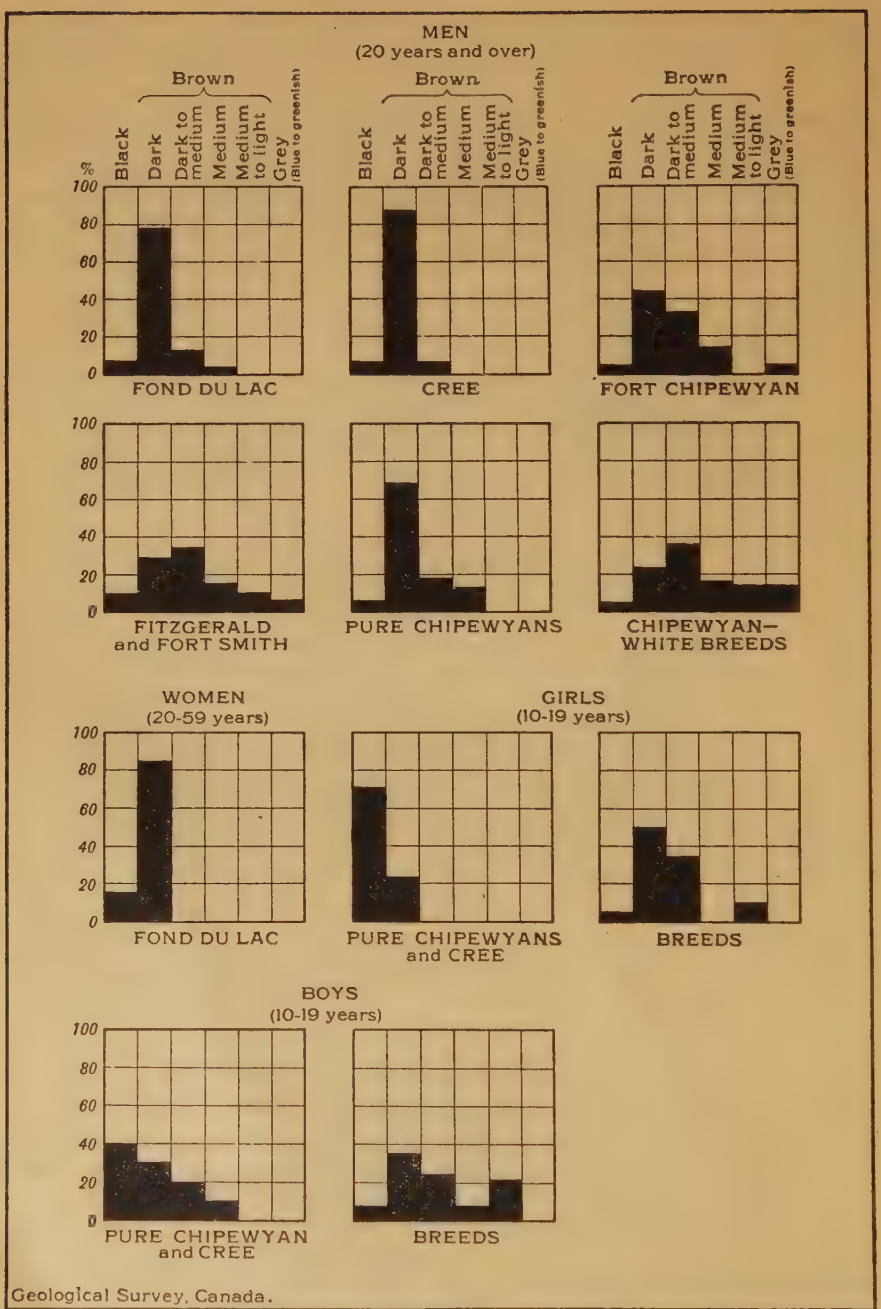

Figure 3. Percentage distribution of the colour of the eye.

nine instances was the primitive formula not encountered. In six of these instances the index was equal in length to the ring finger, $3>2=4>5>1$. Of these six, five were of white admixture, namely one man (McM. 1), three boys (McM. 11 and 13; Ch.-white breed 3) and one girl (Cree-white 9). One boy (Ch. 4) was likely pure. In three instances the index exceeded the ring finger in length, the formula being $3>2>4>5>1$. Of these three one man (Ch. 16) was almost certainly of white admixture, one old man (Cree 27) was of white admixture, and one woman (F-d-l 17) was said to be pure. Of these nine, therefore, in which the formula departed from the primitive, seven have, with reasonable certainty, some white blood in their veins.

Of the 434 Indians, men, women, and children, examined last year, in only two cases was the index equal to the ring finger and in only one case, greater.

Teeth. Finding last year among the Cree and Saulteaux Indians of northeastern Manitoba that it was the rule and not the exception to find the lower incisor teeth crowded together and overlapping each other, it was decided to make further observations this year; for the condition cannot be without significance. It is natural to attribute it directly or indirectly to some dietetic deficiency, or to some endocrine disturbance; or, it may conceivably indicate, and be the result of, a shortening of the jaw in these Indians. This year's findings are much the same as those of last year. The lower incisor teeth of approximately 70 per cent[1] of all the Indians examined this year were out of true alinement; and in about 30 per cent of cases the upper incisors were involved in addition to the lower incisors. In one instance a pre-molar, and in another a canine was out of line. Pure Chipewyans are affected with about the same frequency as breeds. The Crees suffer least. The condition was almost as frequently met with in children (pure Indians and breeds of 10-19 years of age) as it was in adults.

Dental Caries. The teeth were systematically examined for caries. If any tooth was found to be missing or decayed its appropriate space was scored across on the form prepared for this purpose. Though minor degrees of caries undoubtedly escaped notice, it is unlikely that any cavity of appreciable size, or that any missing tooth, is unrecorded. Pyorrhoea alveolaris and gingivitis are not regarded as caries, and records were not made of these conditions.

In appendix XI, page 58, the details of the state of the teeth of each individual are given and the reader is referred to this. From this appendix it is calculated that:

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[1]F-d-l, men, 64% of the 31 examined.
Ch., men and old men, 79% of the 19 examined.
F. and F.S., men and old men, 76% of the 21 examined.
Cree, men and old men, 53% of the 33 examined.
Pure, men and old men, 77% of the 44 examined.
Breeds, men and old men, 80% of the 20 examined.
Women, 68% of the 19 examined.
Boys, 68% of the 25 examined.
Girls, 41% of the 22 examined.

(1) 94 per cent of the 33 men examined at Fond-du-lac had sound teeth. The 2 persons who made up the remaining 6 per cent had among them 10 carious teeth.

(2) 76 per cent of the 21 women examined at Fond-du-lac had sound teeth. The 5 persons who made up the remaining 24 per cent had among them 12 carious teeth.

(3) 62 per cent of the 21 men and old men examined at Chipewyan had sound teeth. The 8 persons who made up the remaining 38 per cent had among them 34 carious teeth.

(4) 54 per cent of the 24 men examined at Fitzgerald and Fort Smith had sound teeth. The 11 persons who made up the remaining 46 per cent had among them 31 carious teeth.

(5) 58 per cent of the 31 men and old men—Cree—had sound teeth. The 13 persons who made up the remaining 42 per cent had among them 39 carious teeth.

If to have sound teeth be the mark of a pure Indian, and if to have carious teeth an indication that there is a strain of white blood in the stock, then the Fond-du-lac men and women are the purest, and the Chipewyan band of Chipewyans, the Fitzgerald and Fort Smith bands, and the Crees follow in that order.

(6) And since 80 per cent of the 44 assumedly pure Chipewyans examined had sound teeth (the 9 persons who made up the remaining 20 per cent had among them 19 carious teeth)

(7) And since 58 per cent of the 26 Chipewyan-white breeds examined had sound teeth (the 11 persons who made up the remaining 42 per cent had among them 51 carious teeth) it would appear on this basis that the "assumedly pure" Chipewyans are actually more mixed than the Fond-du-lac band, though they are very evidently less mixed than the breeds.

The Crees examined this year at Chipewyan had better teeth than the Crees examined last year at Oxford House; for the former had 58 per cent sound teeth and the latter only 36 per cent. In fact the teeth of those examined in Lake Athabaska region are, on the whole, appreciably more free from caries than the teeth of those examined in northeastern Manitoba.

Of the 39 persons mentioned above, among whom 126 carious or missing teeth occurred, a larger percentage had lower than upper teeth affected; the proportion being 63 per cent lower to 37 per cent upper.

The teeth of the right side are affected with somewhat the same frequency as those of the left; upper right, 52·5 per cent, to upper left, 47·5 per cent; lower right, 46 per cent, to lower left, 54 per cent.

Of 21 persons with only one decayed tooth, in eight cases (40 per cent) that tooth is the first lower molar; in three cases (15 per cent) the second lower molar; in five cases (25 per cent) the third lower molar; in 1 case (5 per cent) the third upper molar; in 1 case (5 per cent) the second upper molar; in 1 case (5 per cent) the first upper pre-molar; in two cases (10 per cent) the first upper incisor. In no case was the first upper molar the only affected tooth.

The frequency with which the various teeth of male and female adults were affected with dental caries is shown on a per thousand basis in the following table, in which calculations are made to full figures. The actual number of teeth affected was 126.

TABLE III

	Right								Left								
	M_3	M_2	M_1	PM_2	PM_1	C	I_2	I_1	I_1	I_2	C	PM_1	PM_2	M_1	M_2	M_3	
Upper.....	72	40	48	32	8	....	....	16	8	....	....	16	8	40	40	48	=376
Lower.....	88	88	96	8	8	8	....	....	....	....	....	....	16	136	80	104	=632

BLOOD GROUPS

An endeavour was made to obtain as many samples as possible of blood for grouping purposes in the expectation of being able to promote still further the view which published data strongly support, namely, that the blood of the North American Indian belongs to group O (group 1 Jansky) and pure Indians are, therefore, universal donors: their blood may be transfused into the vessels of individuals of any and every group without causing deleterious effects. Further, if the findings sustained this contention, we should be enabled to call to our aid one other characteristic (in addition to the colour of the eye, type of hair, etc.) which would assist in distinguishing Indians of pure stock from those who are partly white.

In all, 123 samples of blood were tested, these being taken from 114 adult and old men, one woman, and eight boys, of whom some were pure Indian; and others, breeds. Of these 123 samples, 83 per cent belong to group O; 8 per cent to A; 9 per cent to B; 0 per cent to AB. The data concerning the individuals are to be found in the appendix.

The following table, No. IV, records the actual and the percentage distribution of the blood groups of the four bands regarded both singly and collectively.

TABLE IV

Band of Indians	Nos.	Blood groups			
		1	2	3	4 (Jansky)
		0	A	B	AB
Chipewyan					
(1) Fond-du-lac.....	29	18	6	5	0
(2) Chipewyan.....	14	13	0	1	0
(3) Fitzgerald and Fort Smith.....	26	24	1	1	0
	69	80%	10%	10%	0·0%
Cree					
(4) Chipewyan.....	33	100%	0·0%	0·0%	0·0%
Total Chipewyan and Cree.....	102	88%	7%	7%	0·0%

This is in pretty close agreement with Snyder's findings for 453 Indians, said to be pure, namely, 91·3 per cent, 7·7 per cent, 1·0 per cent, and 0·0 per cent. It is, however, not claimed that all of these 102 Indians are pure. In fact, of the six Chipewyans at Fond-du-lac who fall into group A the interpreter felt certain that five were pure (three being closely related to each other), but of the sixth he was uncertain whether he was pure or not. Of the five in group B, two were regarded by the interpreter as pure and three as mixed (of the three mixed, two were brothers whose parents both had traces of white blood, and the third may have been of mixed origin, for his brother was said to have a heavy moustache). The one Chipewyan at Chipewyan who falls into group B, though looking every inch an Indian, likely has traces of white blood; because his children look white; his cephalo-facial index is 92·5 and he is becoming bald on the crown of his head (referred to on page 8). Of the lineage of the two Chipewyans at Fitzgerald who fall into groups A and B the interpreter knew nothing.

In any case, though the numbers dealt with are small they are sufficient to indicate that these Indians in Canada have almost the same blood group distribution as those in the United States of America.

Crees are of Algonquian stock; and Chipewyans of Athapascan. This difference in stock may account for the difference in the blood grouping. For, whereas the Crees belong 100 per cent to group O, the Chipewyans are only 80 per cent group O. As the Chipewyans are probably relatively recent arrivals on this continent, their grouping might be expected to be akin to that of the inhabitants of eastern Asia, but it certainly does not resemble that of the Japanese, Chinese, or Koreans. It is, in fact, definitely North American Indian or mixed Indian in type. If it is correct to assume that all pure Indians belong entirely or almost entirely to group O, then we must regard this Cree band as being of much purer stock than the three Chipewyan bands. It still, however, remains to be confirmed that pure Cree do belong 100 per cent to group O, for in the circumstances one is hardly justified in placing much reliance on a percentage based on a total of 33, especially when 4 of these 33 are said to have small amounts of white blood in their veins.

The blood grouping of those who have been selected from the different localities, as being on the evidence of the various interpreters, on the one hand pure Chipewyan Indians, and on the other Chipewyan-white breeds, is set out in table V.

TABLE V

—	Nos.	O	A	B	AB
Chipewyans					
Assumedly pure	38	76·3%	10·5%	13·2%	0·0%
White breeds	20	85·0%	5·0%	10·0%	0·0%

From this it may be supposed that the interpreters, reliable and locally experienced as they were, could not discriminate between pure Indians and those with traces of white blood. For those they selected as pure are, on this basis, even less pure than the Fond-du-lac band; in fact, less pure even than the very breeds.

ANTHROPOMETRIC CHARACTERS

Measurements Recorded and Indices Calculated

The following measurements were taken:

1. Stature
2. Sitting height
3. Length of head (glabella ad maximum)
4. Width of head (biparietal maximum)
5. Width of forehead (frontal minimum)
6. Length of face
   (a) Menton-nasion
   (b) Menton-crinion
7. Width of face (bizygomatic maximum)
8. Height of nose
9. Width of nose
10. Length of mouth
11. Length of ear
12. Width of ear
13. Length of upper lip
14. Length of hand
15. Width of hand

From these measurements the following indices have been calculated:

16. Sitting height (sitting height to stature)
17. Cephalic (width of head to length of head)
18. Cephalo-facial (width of face to width of head)
19. Facial (length of face (menton-nasion) to width of face)
20. Nasal (width of nose to height of nose)
21. Ear (width of ear to length of ear)
22. Hand (width of hand to length of hand)

The data from which the report has been worked up and from which the various tables have been compiled are set out in the appendices, and are available to any one who may wish to treat the material in a different manner. The results of the method it was decided to adopt are presented in their most concise form in the "Table of Means and Probable Errors of Means" on page 30. Anyone, who would analyse the figures from which a particular mean has been calculated, should turn in the first place to the appropriate frequency distribution table where he will find the standard deviation, the probable error of the mean, the coefficient of variation, and the number of cases examined all duly recorded: and, subsequently, if he would pursue his investigation further, let him consult tables VI-X, which interpret the means and probable errors of means and make words more or less superfluous.

The Probable Error

It may, perhaps, be of help to some in the understanding of this report if an explanation is offered of how "Probable Errors of Means" are to be interpreted, for, unless the significance of this function is appreciated the figures in the various tables of the report will fail to convey their full meaning.

For example, in table VI, it is stated that the mean or average stature of the men at Fond-du-lac is 164·7 cm., and of those at Chipewyan 167·1 cm. These Chipewyans at Fond-du-lac are, therefore, on an average 2·4 cm. (i.e., practically 1 inch) taller than the Chipewyans at Chipewyan. If we assume that the measurements were carefully taken and that there

have been no errors either in calculating or in transcribing the figures, then it is evident that the figures given above denote accurately the mean statures of the two groups of individuals who were measured; but, to what extent are we entitled to suppose that they apply equally to those members of the bands who were not available for measurement or who refused to be measured? The answer to this will depend upon whether random samples of the populations were taken; whether the numbers examined were ample; and whether the populations were unmixed. Since these Indians were measured in the order in which they came to receive their treaty money, and since subsequently every tent and habitation was visited in order that no one should be overlooked, it is clear that the individuals were not selected but were taken at random. Was a sufficient number of adult males in each band examined? As it should be the aim to obtain at least 25 individuals, it may be said that in the case of Fond-du-lac and Fitzgerald the numbers are reasonable; in the case of Chipewyan they are meagre. It cannot be claimed for any band that it is totally pure and unmixed Indian, but the mixtures essentially consist in having varying amounts of white blood, and though pure Indians and those who are tinged with white blood are being grouped together, there is no suggestion of including pure Indians and pure white persons.

It has been ascertained that the probable error of the mean stature of the Fond-du-lac men is $\pm 0{\cdot}78$ and of the Chipewyan men $\pm 1{\cdot}27$. (This is set out in table XI.) How "Probable Errors" are calculated need not concern us; we may accept them and may proceed in the following manner to employ them.

Stature and probable error of:

Chipewyans at Chipewyan	167·1	± 1·27
" " Fond-du-lac	164·7	± 0·78
	2·4 cm.	

The difference in the statures is obviously 2·4 cm.

If the probable errors $\pm 1{\cdot}27$ and $\pm 0{\cdot}78$ be squared, the results—as any book of tables will show—are 1·6129 and 0·6084. These when added together come to 2·2213, the square root of which is 1·490. If this result (1·490) which is known as the probable error of the difference of these statures (P.E. diff.) be divided into the difference between the statures (2·4 cm.) the answer is 1·6; that is to say the difference between the statures is 1·6 times greater than the probable error of that difference, or in other words, the ratio between them is as 1·6 is to 1·0. On consulting an appropriate table of odds (*See* page 20), it will be seen that this ratio, if translated into terms of odds, will read thus: the chances or odds are 2·57 to 1·0 in favour of our finding a difference of at least 2·4 cm. in the mean stature of the Chipewyans at Fond-du-lac and at Chipewyan, had we been able to measure infinitely larger numbers than circumstances permitted.

Or it might be expressed thus: were 3·57 such groups of Chipewyan Indians to be measured their mean statures would be found to differ by 2·4 cm. or more in 2·57 of the groups, whereas in one out of the 3·57 the difference would be less than 2·4 cm. It is on this basis then that com-

parisons are to be drawn. The reason for saying in the above that the odds or chances are 2·57 to 1·0 is justified by the fact that it has been established mathematically that when a difference divided by the probable error of that difference is:

1·0,	the odds are as 1·0 to 1·0[1]
1·6	2·57 to 1·0
2·0	4·64 to 1·0
2·2	6·25 to 1·0
2·5	9·90 to 1·0
2·6	11·58 to 1·0
2·7	13·58 to 1·0
2·8	15·96 to 1·0
2·9	18·82 to 1·0
3·0	22·24 to 1·0
4·0	142·30 to 1·0
5·0	1341·00 to 1·0
6·0	19300·00 to 1·0
7·0	427000·00 to 1·0

As it would clearly not be reasonable to place reliance on such slender odds as 2·57 to 1·0, it is, therefore, assumed that the mean difference of 2·4 cm. in stature is not significant in the present instance, and on this account in the fourth column of table VI, under the heading of stature, a space has been left blank. It is, in fact, usual when dealing with such data as these to pay little attention to odds of less than 22 to 1 (which is the equivalent of a Diff./P.E. diff. of 3·0), for such odds give reasonable assurance that a difference is a genuine one. If a Diff./P.E. diff. be 4, 5, 6, or more, then surely when dealing with problems such as these, we have what is tantamount to proof that such a difference would be found to exist were we to measure entire populations and not be limited to relatively small samples of them. In table VI, a blank space has been left in the fourth column whenever a Diff./P.E.diff. has been found to be less than 2·2 (i.e., the odds are less than 6·25 to 1·0).

The Three Bands of Chipewyan Indians

The three bands of Chipewyan Indians, those from Fond-du-lac, Chipewyan, Fitzgerald, and Fort Smith, may first be compared with each other; and while this is being done it will be kept in mind that the maximum number of individuals in these three bands available for any measurement (or any index) is small, being respectively, thirty-three, fifteen, and twenty-four. In sections A, B, C, of table VI, each of the bands is compared with the other two. The first and second columns of each section record the mean measurements (and indices) of the two bands under consideration; the third column records the differences between these means; and the fourth column records the number of times the difference between the two means is greater than the probable error of its difference; no entries are made, however, unless differences are more than 2·2 times greater than their probable errors.

[1]This is an excerpt from table 40, "Medical Biometry and Statistics," by Ramond Pearl.

Table VI

The Three Chipewyan Bands Compared with Each Other

Measurements in mms.	A				B				C			
	Fond-du-lac *v.* Chipewyan				Fond-du-lac *v.* Fitzgerald				Chipewyan *v.* Fitzgerald			
	Fond-du-lac	Chip.	Diff.	Diff./P.E. diff.	Fond-du-lac	Fitz. and F. Smith	Diff.	Diff./P.E. diff.	Chip.	Fitz. and F. Smith	Diff.	Diff./P.E. diff.
Stature	1,647·0	1,671·0	24·0	.....	1,647·0	1,703·0	56·0	5·3	1,671·0	1,703·0	32·0	.....
Sitting height	887·0	908·0	21·0	3·5	887·0	890·0	3·0	.....	908·0	890·0	18·0	2·6
Sitting height index	53·9	54·5	0·6	.....	53·9	52·5	1·4	4·3	54·5	52·5	2·0	5·0
Cephalic index	78·8	79·6	0·8	.....	78·8	80·1	1·3	3·0	79·6	80·1	0·5	.....
Glabella ad. max	193·8	194·8	1·0	.....	193·8	191·8	2·0	.....	194·8	191·8	3·0	2·5
Biparietal	152·9	155·2	2·3	2·7	152·9	154·0	1·1	.....	155·2	154·0	1·2	.....
Bizygomatic	150·0	149·0	1·0	.....	150·0	147·9	2·1	2·5	149·0	147·9	1·1	.....
Cephalo-facial index	98·4	95·9	2·5	4·9	98·4	95·9	2·5	5·3	95·9	95·9	0·0	.....
Frontal minimum	104·6	105·2	0·6	.....	104·6	105·1	0·5	.....	105·2	105·1	0·1	.....
Menton-crinion	186·6	191·3	4·7	2·6	186·6	187·4	0·8	.....	191·3	187·4	3·9	.....
Menton-nasion	124·1	127·8	3·7	2·5	124·1	123·9	0·2	.....	127·8	123·9	3·9	2·7
Facial index	82·6	85·4	2·8	2·9	82·6	84·0	1·4	.....	85·4	84·0	1·4	.....
Upper lip	19·2	19·5	0·3	.....	19·2	16·8	2·4	3·9	19·5	16·8	2·7	5·3
Nose height	54·0	57·2	3·2	4·9	54·0	54·4	0·4	.....	57·2	54·4	2·8	4·6
Nose width	39·4	38·7	0·7	.....	39·4	38·9	0·5	.....	38·7	38·9	0·2	.....
Nose index	72·9	68·7	3·2	3·0	72·9	72·0	0·9	.....	68·7	72·0	3·3	.....
Mouth length	62·3	63·8	1·5	.....	62·3	60·2	2·1	3·7	63·8	60·2	3·6	3·8
Ear length	66·1	66·0	0·1	.....	66·1	65·9	0·2	.....	66·0	65·9	0·1	.....
Ear width	37·3	36·3	1·0	.....	37·3	35·4	1·9	4·3	36·3	35·4	0·9	.....
Ear index	56·9	54·8	2·1	2·5	56·9	53·6	3·3	4·1	54·8	53·6	1·2	.....
Hand length	189·9	191·7	1·8	.....	189·9	189·5	0·4	.....	191·7	189·5	2·2	.....
Hand width	88·9	90·8	1·9	2·5	88·9	88·4	0·5	.....	90·8	88·4	2·4	3·4
Hand index	47·2	47·1	0·1	.....	47·2	46·7	0·5	.....	47·1	46·7	0·4	.....
Number of cases	33	15	.....	.....	33	24	.....	.....	15	24	.....	.....

In the fourth column of section A it is noticed that in four instances 3·0 or a figure greater than 3·0 is set down; namely, for the sitting height (3·5), cephalo-facial index (4·9), nose height (4·9), and nasal index (3·0). Two of these are measurements; two are indices. It is, therefore, safe to assume that between the Chipewyan men at Fond-du-lac and those at Chipewyan there is a difference in mean sitting height, and that this difference is at least (as the third column indicates) 2·1 cms. (nearly an inch); that there is a difference of at least 3·2 mms. in nose height; of at least 2·5 per cent in cephalo-facial index; and of at least 4·2 per cent nasal index.

If, however, we are prepared to regard Diff./P.E. diff. of 2·5 (the odds being 9·90 to 1·0) as significant, then between these two bands, in addition to the above four items, we must include differences in the biparietal, menton-crinion, and menton-nasion measurements, in the facial and ear indices and in the width of the hand. The minimal extent of these differences is denoted in column 3.

From section B, columns 3 and 4, it may be seen that between the Fond-du-lac and Fitzgerald men there is a difference of 5·6 cms. (or more than 2 inches) in stature. This difference is clearly due to the long legs of the Fitzgerald men, for the lengths of their bodies (vertebral column and head), as noted by their sitting height, are the same. The Fitzgerald men have very slightly rounder heads; it is quite likely that their faces are narrower (Diff./P.E. diff. 2·5); there is certainly a difference in their

cephalo-facial indices; the upper lip is 2·4 mms. shorter, the mouth 2·1 mms. shorter, the ears 1·9 mms. narrower, on which account the ear index is smaller, i.e., the ears of the two bands are of the same length, but they are different in breadth. In other respects the two bands resemble each other.

Similarly, column 4 of section C indicates in what measurements the Chipewyan and Fitzgerald men differ from each other, and column 3 tells the extent of these differences. In short, the Chipewyan men differ from both the Fond-du-lac and Fitzgerald bands in having a greater sitting height, in, perhaps, having a deeper forehead and longer face, in having a higher nose and a broader hand; whereas, in these measurements the Fond-du-lac and Fitzgerald men do not differ from each other. The sole peculiarity of the Fond-du-lac men is their high mean cephalo-facial index; and perhaps also a high ear index.

The Fitzgerald men are distinguished by their low sitting height index, short upper lip, and narrow mouth. It is, moreover, not improbable that from Fond-du-lac through Chipewyan to Fitzgerald there is a gradual increment in stature together with a gradual diminution in ear width. In width of forehead, width of nose, length of ear, and length of hand there are not significant differences between any of these three bands.

Assumedly Pure Chipewyan Indians and Chipewyan-White Breeds

In the same manner we may compare the forty-four men who are deemed to be pure Chipewyan Indians with the twenty-two who are Chipewyan-white breeds. From table VII, section A, column 4, it may be seen that there is certainly a difference in stature of 4·7 cm. between the pure and breed Indians, the breeds being the taller (Diff. / P.E. diff. 3·6); that in length of body there is no appreciable difference and, therefore, that the length of the lower limb is responsible for the difference in their statures; that in the breeds the head is possibly a little rounder, but there is no definite evidence of any difference either in length or breadth of head; the face is certainly narrower and the cephalo-facial index less. The Indian-white breeds may be expected to differ from pure Indians in having a broader forehead, a shorter and narrower face, higher facial, and lower cephalo-facial indices, a shorter upper lip, a less high and a narrower nose, together with a higher nasal index, and in having a narrower mouth. Although the mean measurements of these Chipewyan-white breeds suggest that these trends exist here, column 4 definitely supports them only in the case of the lip, and, perhaps, also, in the case of the nose height.

Table VII

Pure Chipewyan and Chipewyan-White Breeds Compared

(In the fourth column, entitled Diff./P.E. diff., no entry has been made unless a difference is more than 2·2 times greater than its probable error.)

Measurements in mm.	C				D			
	Chipewyan				Sioux			
	Assumed to be pure	Assumed to be breeds	Mean difference	Diff. / P.E. diff.	Assumed to be pure	Assumed to be breeds	Mean difference	Diff. / P.E. diff.
Stature	1,664·0	1,711·0	47·0	3·6	1,724·0	1,735·0	11·0	.....
Sitting height	894·0	897·0	3·0	.....	885·0	896·0	11·0	3·1
Sitting height index	53·8	52·3	1·5	4·1	51·4	51·6	0·2	.....
Cephalic index	79·3	80·4	1·1	2·4	79·6	79·4	0·2	.....
Glabella ad. maximum	193·5	193·1	0·4	.....	194·9	194·4	0·5	.....
Biparietal	153·7	155·2	1·5	.....	155·1	154·3	0·8	.....
Bizygomatic	149·6	146·1	3·5	5·2	149·1	143·4	5·7	12·4
Cephalo-facial index	97·6	94·3	3·3	8·1	96·1	92·9	3·2	12·0
Frontal minimum	104·2	105·6	1·4	.....	.....	.....	.....	.....
Menton-crinion	187·6	186·8	0·8	.....	189·9	186·4	3·5	4·8
Menton-nasion	125·3	124·3	1·0	.....	124·6	121·5	3·1	5·9
Facial index	83·8	84·8	1·0	.....	83·6	84·8	1·2	2·8
Upper lip	19·2	16·9	2·3	4·8	.....	.....	.....	.....
Nose height	55·1	53·7	1·4	.....	58·3	54·9	3·4	11·5
Nose width	39·7	38·8	0·9	.....	39·9	37·6	2·3	9·0
Nose index	71·9	73·6	1·7	.....	68·8	69·2	0·4	.....
Mouth length	62·2	61·3	0·9	.....	.....	.....	.....	.....
Ear length	67·0	67·0	0·0	.....	.....	.....	.....	.....
Ear width	36·8	35·3	1·5	3·4	.....	.....	.....	.....
Ear index	55·0	53·6	1·4	3·1	.....	.....	.....	.....
Hand length	189·1	194·6	5·5	3·9	.....	.....	.....	.....
Hand width	88·9	90·9	2·0	2·9	.....	.....	.....	.....
Hand index	47·0	46·9	0·1	.....	.....	.....	.....	.....
Number examined	44	22	.....	.....	540	77	.....	.....

For purposes of easy reference, we have calculated the differences and the Diff./P.E. diff. for Sullivan's[1] data on pure Sioux and Sioux-white breeds, and have placed the figures side by side with the pure Chipewyan and Chipewyan-white breeds in table VII.

From this it will be seen that the measurements of the Chipewyan and Sioux breeds tend always to depart from the measurements of the pure Chipewyan and pure Sioux in a common direction. Further, the breeds are seen to have narrower ears and larger hands, for their hands are both longer and broader than those of the pure.

The differences between the Chipewyans at Fond-du-lac and the forty-four who are "assumed to be pure"; and also between the Fitzgerald Chipewyans and the Chipewyan-white breeds, were worked out, and the few differences found between them are noted below. Now, when it is recalled that of the forty-four who are "assumed to be pure" Chipewyans, eighteen are drawn from the group of thirty-three Fond-du-lac men, and

[1] Sullivan, Louis R.: Anthropological Papers of the American Museum of Natural History, vol. XXIII, pt. III (New York, 1920).

that of the twenty-two breeds ten are drawn from the twenty-four Fitzgerald men, it will be readily understood that the pure are seldom found to differ significantly from those at Fond-du-lac (Diff./P.E. diff. for cephalo-facial index, 2·0, nose height, 2·2, ear index, 2·6); and that the breeds likewise seldom differ significantly from the Fitzgerald men (Diff./P.E. diff. from bizygomatic, 2·4, cephalo-facial index, 4·4, hand length, 2·9, hand width, 3·5). It is of interest to note that these figures, compiled in the manner they have been, show that between the two groups there is a significant difference in the cephalo-facial index.

Cree at Chipewyan and at Oxford House Compared

Between the twenty-five Cree examined this year at Chipewyan and the fifty-five Cree examined last year at Oxford House, the measurements, despite the wide expanse of country which separates the two bands, are in remarkably close agreement.

Table VIII, section A, shows that those at Chipewyan are at least 11·5 cm. shorter than those at Oxford House, and that the difference is due almost solely to a difference in the length of the lower limbs. There are no differences either in cranial or in facial proportions, save, it is true, in the length of the head. In this diameter (glabella ad maximum) the Oxford House men have slightly longer heads, 195·9 mms., as against 193·2 mms., a difference of only 2·7 mms. In length of upper lip there is again a difference of 2·7 mms., and a pretty clear difference in the case of the length of the ear. It will be remarked that the breadth of the head and of the face, and, therefore, the cephalo-facial indices, are as nearly identical as they could reasonably be expected to be. It is, then, in length of leg and of upper lip that there are undoubtedly differences between the two bands; and, in the length of head and ear there are almost certainly significant differences. Above all, one will note that the same long, narrow head prevails in both bands of Cree, and that the face, though not actually wide, is, when compared with the head, relatively so; hence the high cephalo-facial index of the Cree. Except in these four items, the ratios of Diff./P.E. diff. do not, on account of their smallness, entitle us to conclude that there are significant differences between the two bands of Cree under discusstion.

It may be noted that even where the mean measurements of the Oxford House Cree differ even insignificantly from those of the Chipewyan Cree, they incline towards northern European proportions. This may be due to mere chance. It might be due to a difference in the mean age of the two bands, because, as has been pointed out,[1] the diameters of the face and cranium, and the proportions of most soft parts, including the nose, mouth, hand, and length of ear, increase slightly with increasing age, but as the mean age of the two bands hardly differs, being for the one, thirty-six years, and for the other, thirty-three and a half years, some other cause must be sought. A third and likely reason is a difference in the amount of white blood in the two bands. The Oxford House band is, beyond question, the more mixed; their lighter complexions, lighter-coloured eyes, greater

[1] Hrdlicka, Ales: The Old Americans. (Williams and Wilkins, Baltimore, 1925.)

hairiness, and the greater percentage of persons with carious teeth, are amongst the factors that proclaim this. This third reason most likely explains at least some of the not definitely significant differences between the mean proportions of the two bands.

Table VIII

Cree Compared with Cree; Cree Compared with Chipewyan

In section A the Cree at Chipewyan are compared with the Cree at Oxford House. In section B the Cree at Chipewyan are compared with the Chipewyan at Fond-du-lac. The first and second columns of each section record their mean or average measurements; the third column, the differences between the means; and, the fourth column, entitled Diff/P.E. diff., states the number of times a difference is greater than its probable error. No entry has been made unless a difference is more than 2·2 times greater than its probable error.

Measurements in mm.	A				B			
	Cree *v.* Cree				Chipewyan *v.* Cree			
	Chipewyan	Oxford House	Mean difference	Diff. / P.E. diff.	Fond-du-lac	Chipewyan	Mean difference	Diff. / P.E. diff.
Stature	1,610·0	1,725·0	115·0	10·3	1,647·0	1,610·0	37·0	3·1
Sitting height	891·0	887·0	4·0	.....	887·0	891·0	4·0	.....
Sitting height index	55·8	51·3	4·5	17·0	53·9	55·8	1·9	5·5
Cephalic index	77·6	76·9	0·7	.....	78·8	77·6	1·2	3·5
Glabella ad. maximum	193·2	195·9	2·7	3·2	193·8	193·2	0·6	.....
Biparietal	150·0	150·7	0·7	.....	152·9	150·0	2·9	3·5
Bizygomatic	144·6	144·4	0·2	.....	150·0	144·6	5·4	7·7
Cephalo-facial index	96·6	95·9	0·7	.....	98·4	96·6	1·8	4·1
Frontal minimum	103·2	104·5	1·3	.....	104·6	103·2	1·4	.....
Menton-crinion	184·0	184·6	0·6	.....	186·6	184·0	2·6	.....
Menton-nasion	124·6	122·9	1·7	.....	124·1	124·6	0·5	.....
Facial index	86·1	85·2	0·9	.....	82·6	86·1	3·5	5·8
Upper lip	19·7	17·0	2·7	5·7	19·2	19·7	0·5	.....
Nose height	54·7	54·1	0·6	.....	54·0	54·7	0·7	.....
Nose width	38·2	38·6	0·4	.....	39·4	38·2	1·2	.....
Nose index	69·2	71·6	2·4	3·5	72·9	69·2	3·7	2·8
Mouth length	60·0	60·1	0·1	.....	62·3	60·0	2·3	4·2
Ear length	65·6	67·6	2·0	2·9	66·1	65·6	0·5	.....
Ear width	35·2	35·3	0·1	.....	37·3	35·2	2·1	5·1
Ear index	53·4	52·1	1·3	.....	56·9	53·4	3·5	4·5
Hand length	191·4	192·7	1·3	.....	189·9	191·4	1·5	.....
Hand width	90·1	90·0	0·1	.....	88·9	90·1	1·2	.....
Hand index	47·3	46·5	0·8	.....	47·2	47·3	0·1	.....
Number examined	25	55	.....	.....	33	25	.....	.....

Contrast now these Cree from Chipewyan, which is at the west end of lake Athabaska, with the Chipewyans at Fond-du-lac, which is at the east end of the lake. Though only 175 miles separate their reserves, the two bands springing from different stock, and speaking different tongues, differ from each other in a variety of physical proportions, but—and it is worthy of more than passing notice—in the only four respects (stature, length of head, length of upper lip, and length of ear) in which the Chipe-

wyan Cree differ from the Oxford House Cree they resemble these neighbouring Chipewyan Indians. For whereas, the two bands of Cree differ from each other in stature by 11·5 cm., the Chipewyan Cree differ from the Fond-du-lac men by only one-third of that amount, namely, 3·7 cm., and in the other three respects they are not to be distinguished from each other. This is not due to intermarriage between the two tribes, because it is known that they do not intermarry. Is the reason fortuitous or is it environmental? The narrower head and face of the Cree cause their cephalic, cephalo-facial, and facial indices to differ from those of the Chipewyans.

Athapascan, Algonquian, and Siouan Stocks

In table IX the mean measurements and indices of males and females drawn from each of the three great linguistic stocks of Indians in Canada are recorded, together with their mean sexual differences. These three stocks are: the Athapascan, Algonquian, and Siouan. Only in the case of the Siouan can these be considered as amply representative of a stock because each of the two former stocks is represented by only one band. Not, then, until more data are gathered is calculating the probable errors of the sexual differences worth the labour involved.

Stature. From table X it can be seen that there are definitely significant differences in stature between the males and also between the females of these three stocks. The mean sexual differences are very similar in the three bands, being 138 mms. in Athapascan; 124 mms. in both Algonquian and Siouan. These Athapascans are, therefore, small; the Algonquians are taller, the Sioux are distinctly tall.

Sitting Height. Between the Athapascan men and women the mean difference in the sitting height is 63 mms., between the Siouan, 64 mms., and between the Algonquian, 67 mms.

Sitting Height Index. This mean index is practically identical for men and women of both Algonquian and Siouan stocks, but between the Athapascan men and women there is a difference of 0·9 in this index.

Cephalic Index. The mean cephalic indices of both sexes and of all three groups fall between 79 and 80, actually between 78·8 and 80·5. As is usual, the women of each group appear to have very slightly rounder heads than the men. The ratios of the differences to the P.E. differences (Diff./P.E. diff. being 3·2 and 3·1) indicate nevertheless, that it is possible to discriminate between the indices of the men and also of the women of the Athapascan and Siouan stock. The Athapascan are at the lower and the Siouan at the higher end of this very narrow range.

Head Length (Glabella ad maximum). The mean sexual differences in the length of head of the three stocks are almost identical, varying from 7·2 mm. to 7·9 mm. There are no significant differences between the lengths of the heads of the Athapascan and Siouan men, nor of the Athapascan and Siouan women. In fact, the greatest difference in mean length of head of either sex or group is only 2·3 mm., and this (Diff./P.E. diff. 2·6) is not a proved difference.

Width of Head (Biparietal maximum). The mean sexual differences in width of head are 4·2 mm. between the Siouan men and women; 4·3 mm. between the Athapascan men and women; and 5·2 mm. between the

Algonquian men and women. The Algonquian and Siouan men have similar widths of head as have also the women of these two stocks. The Algonquian men and women have slightly longer and slightly broader heads than the Athapascans, but the general shape, as evidenced by the cephalic index, is the same.

Width of Face (Bizygomatic maximum). The mean sexual difference of 8·1 mm. in the face width of the Athapascans is, when compared with that of the Algonquians and Sioux, disproportionately large. There is no significant difference between the width of face of Athapascan and Siouan men nor between that of the Athapascan and Siouan women. It is, however, fairly evident that the Algonquians are to be distinguished by the relative narrowness of this diameter of the face.

Cephalo-facial Index (Head-width, face-width). The very high mean cephalo-facial index of 98·4 in the Athapascan men is arresting. The fact that chiefly contributes to its size is the absolute narrowness of their heads (152·9 mm.), for the width of their faces is not significantly different from that of the Sioux, whose width of head, however, is 155·1 mm. This index distinguishes the respective sexes of each group from each other, the females always having lower mean indices than the men of their own stock. The Athapascan women have a disproportionately low mean index.

Width of Forehead (Frontal minimum). This diameter of the head appears not to differ significantly among the various bands of Indians we have examined. The sexual differences are 2·0 mm. and 2·2 mm. between Algonquians and Athapascans respectively. There appears always to be a tendency for it to be slightly wider in those bands which are more mixed with white blood.

The Face. The chin to hair line (menton-crinion) is a difficult measurement to take. Personal factors are given greater play in the taking of this than they are in the taking of most other measurements. Nevertheless, the Siouan men appear to have the greatest total face length; between the Athapascan and Algonquian men the difference is not significant. Insofar as the women are concerned, the Athapascan and Siouan have similarly long faces; the Algonquian has a shorter face.

The Face Length (Menton-nasion). Among the three groups of men there is a remarkable uniformity in the length of face. It is around 124·5 mm. The Siouan women evidently have shorter faces than the women of the other two groups. Between the Athapascan men and women the mean difference in this diameter appears to be disproportionately little. It is in the height of the forehead that the main variations in the total face length are to be found.

The Nose. There are no differences in the widths of the noses of the men, nor are there any differences in the relative or in the absolute proportions of the noses of the Athapascan and Algonquian men; nor of the Athapascan and Algonquian women. The Siouan men and women have the highest noses for their respective sexes and on that account have proportionately the narrowest noses.

Table IX

The Three Linguistic Stocks

In sections A, B, C mean measurements and indices of male and female representatives (aged 20-59 years) of the three main stocks of Indians in Canada are recorded, together with the mean differences between the two sexes of each stock. The data for section C have been taken from Louis R. Sullivan: Anthropological Papers of the American Museum of Natural History, vol. XXIII, pt. III (New York, 1920).

In section D, for the sake of easy reference, similar data are given for white stock, largely British in origin, taken from Hrdlicka's "Old Americans".

Measurements in mm.	A			B			C			D		
	Athapascan stock			Algonquian stock			Siouan stock			Mainly British stock		
	Chipewyan Indians at Fond-du-lac			Cree and Saulteaux Indians at Island lake			Various bands Sullivan's data			"Old Americans" Hrdlicka's data		
	Males	Females	Mean difference	Males	Females	Mean difference	Males	Females	Mean difference	Males	Females	Mean difference
Stature	1,647·0	1,509·0	138·0	1,700·0	1,576·0	124·0	1,724·0	1,600·0	124·0	1,744·0	1,618·0	126·0
Sitting height	887·0	824·0	63·0	899·0	832·0	67·0	885·0	821·0	64·0	923·0	873·0	50·0
Sitting height index	53·9	54·8	0·9	53·0	52·8	0·2	51·4	51·4	0·0	52·9	53·9	1·0
Cephalic index	78·8	79·6	0·8	79·4	79·9	0·5	79·6	80·5	0·9	78·3	79·4	1·1
Glabella ad max	193·8	186·6	7·2	196·1	188·4	7·7	194·9	187·0	7·9	197·8	186·2	11·6
Biparietal	152·9	148·6	4·3	155·6	150·4	5·2	155·1	150·9	4·2	154·8	148·0	6·8
Bizygomatic	150·0	141·9	8·1	146·8	140·2	6·6	149·1	142·8	6·3	138·6	129·9	8·7
Ceph.-fac. index	98·4	95·5	2·9	94·4	93·2	1·2	96·1	94·7	1·4	89·5[1]	87·8[1]	1·7[1]
Frontal min	104·6	102·4	2·2	104·7	102·7	2·0	.....	.....	.....	105·9	101·2	4·7
Menton-crinion	186·6	180·8	5·8	184·4	175·9	9·5	189·9	179·4	10·5	184·5	175·3	9·2
Menton-nasion	124·1	120·1	4·0	124·7	118·5	6·2	124·6	117·4	7·2	119·3	110·9	8·4
Facial index	82·6	84·9	2·3	84·8	84·6	0·2	83·6	82·3	1·3	86·1	85·4	0·7
Nose height	54·0	51·5	2·5	54·8	50·7	4·1	58·3	55·2	3·1	53·5	49·4	4·1
Nose width	39·4	36·2	3·2	39·9	35·3	4·6	39·9	37·4	2·5	36·1	32·5	3·6
Nose index	72·9	71·5	1·4	72·9	70·0	2·9	68·8	68·0	0·8	67·5	66·0	1·5
Mouth length	62·3	59·1	3·2	60·6	55·8	4·8	.....	.....	.....	53·7	49·5	4·2
Hand length	189·9	177·5	12·4	192·3	180·2	12·1	.....	.....	.....	192·8	173·4	19·4
Hand width	88·9	80·6	8·3	86·3	78·2	8·1	.....	.....	.....	91·8	78·7	13·1
Hand index	47·2	45·7	1·5	44·8	43·5	1·3	.....	.....	.....	47·6	45·4	2·2
Number	33	21	.....	68	100	.....	540	157	.....	247	210	.....

[1] Approximate.

The Mouth. We have no data on the mouths of the Sioux, but the Athapascan men and women have definitely wider mouths than the Algonquian men and women; the mouths of the Athapascan men being 1·7 mm. and the mouths of the Athapascan women being 3·3 mm. wider than those of the Algonquian men and women.

The Hands. Whether or not there is a difference between the lengths of the hands of the Athapascan and Algonquian men and women, respectively, there is certainly a difference in their mean width. The hands of the men of each stock are, in mean measurement, about 12·0 mm. longer and 8·0 mm. wider than those of the women. The Algonquian men and women have, in any case, relatively narrower hands than the Athapascans.

The Upper Lip. There is a definite difference between Athapascan and Algonquian men in length of upper lip.

The Ear. There is a definite difference between the Athapascan and Algonquian men in width of ear, though not in ear length.

In general shape of head these Athapascan men and women, respectively, are hardly to be distinguished from these Algonquian men and

women, though the heads of the Algonquian men and women are a little longer and a little wider than those of the Athapascan (about 2·3 and 1·8 mm.). In breadth of forehead, in length of face, in both the proportions of the nose, and in length of hand the respective sexes are not to be told from each other.

The Athaspacan and Siouan men and women, respectively, closely resemble each other in length of body, in length of head, and in width of face; whereas the Algonquian and Siouan men and women, respectively, only definitely closely resemble each other in width of head.

Each stock may, on careful measurement, be told from the other by differences in stature, sitting height index, cephalo-facial index (Athapascan and Siouan women excepted), and by facial index (Athapascan and Algonquian women and perhaps Athapascan and Siouan men excepted); but the differences between them are, for the most part, very slight, that is to say, these North American Indians differ very little from each other and it is only when delicate statistical methods are employed that these differences may be detected.

Their differences in stature, as represented by the data at our disposal, though marked, are not of more value in distinguishing one stock from another than the cephalo-facial index, which increases on passing westward from Manitoba; that is to say, it is narrowest among the Algonquian, wider among the Siouan, and still wider among the Athapascan Indians, and it becomes even wider amongst the Haida of Queen Charlotte islands.[1]

Table X

Males and Females of the Three Stocks

In this table the three groups of Indians, whose mean measurements are recorded in table IX, are compared with each other; males with males, and females with females. The figures in the columns entitled "Diff." denote mean or average differences; the figures in the columns entitled "Diff./P.E. diff." represent the number of times a difference is greater than its probable error. Unless, however, it is more than 2·5 times greater no entry has been made.

Differences in mm.	Athapascan *v.* Algonquian				Athapascan *v.* Siouan				Algonquian *v.* Siouan			
	Males		Females		Males		Females		Males		Females	
	Diff.	Diff./P.E. diff.	Diff.	Diff./P.E. diff.	Diff.	Diff./P.E. diff.	Diff.	Diff./P.E. diff.	Diff.	Diff./P.E. diff.	Diff.	Diff./P.E. diff.
Stature	53·0	5·8	67·0	8·0	77·0	9·7	91·0	11·2	24·0	4·7	24·0	5·4
Sitting height	12·0	3·0	8·0	.....	2·0	.....	3·0	.....	14·0	5·0	11·0	3·8
Sitting height index	0·9	3·3	2·0	6·6	2·5	9·4	3·4	11·1	1·6	15·5	1·4	10·4
Cephalic index	0·6	.....	0·3	.....	0·8	3·2	0·9	3·1	0·2	.....	0·6	2·6
Glabella ad max	2·3	2·6	1·8	2·6	1·1	.....	0·4	.....	1·2	.....	1·4	2·9
Biparietal max	2·7	4·0	1·8	3·1	2·2	3·9	2·3	.....	0·5	.....	0·5	.....
Bizygomatic max	3·2	4·7	1·7	.....	0·9	.....	0·9	.....	2·3	5·7	2·6	6·9
Ceph.-fac. index	4·0	11·3	2·3	5·2	2·3	7·1	0·8	.....	1·7	8·8	1·5	6·6
Frontal min	0·1	.....	0·3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Menton-crinion	2·2	.....	4·9	3·9	3·3	3·3	1·4	.....	5·5	7·5	3·5	4·7
Menton-nasion	0·6	.....	1·6	.....	0·5	.....	2·7	3·2	0·1	.....	1·1	.....
Facial index	2·2	4·0	0·3	.....	1·0	.....	2·6	5·2	1·2	3·0	2·3	6·6
Nose height	0·8	.....	0·8	.....	4·3	10·5	3·7	5·6	3·5	10·5	4·5	15·5
Nose width	0·5	.....	0·9	.....	0·5	.....	1·2	3·3	0·0	.....	2·1	9·0
Nose index	0·0	.....	1·5	.....	4·1	4·7	3·5	2·8	4·1	7·1	2·0	3·5
Mouth length	1·7	3·7	3·3	5·6	.....	.....	.....	.....	.....	.....	.....	.....
Hand length	2·4	.....	2·7	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hand width	2·6	4·9	2·4	4·8	.....	.....	.....	.....	.....	.....	.....	.....
Hand index	2·4	8·2	2·2	6·6								
Upper lip	2·7	4·6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ear length	0·2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ear width	1·9	5·2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ear index	3·3	5·2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Three specimens in the Anatomical Museum, University of Manitoba.

CONCLUSIONS

In concluding, it may be pointed out that the primary object of the report is to present the data collected from the different Indian reserves in the region of lake Athabaska during the summer of 1928. This is done in the appendices on page 47 *et seq.*

In all, 213 Indians were examined; of these, 160 were over twenty years of age. For the most part they are Chipewyan, but some are Cree and others are breeds (page 55). Their descriptive characters, their teeth, their blood grouping, and their physical proportions were among the features investigated. The report is too brief to call for a summary, but it may be re-stated that the Chipewyan Indians at Fond-du-lac, might from the location of their reserve, be expected to be less mixed with white blood (or more pure) than those at Chipewyan and at Fitzgerald and Fort Smith. The coarse quality of the hair of the head (table I, page 8), the relative absence of hair on the upper lip, chin, and cheek (table II), and the large percentage of dark-coloured eyes (Figure 3, page 12) are among the descriptive characters which support this. The very high percentage of persons with sound teeth, and the small numbers of decayed teeth among those whose teeth were not quite sound, seemed to lend this further support (page 58). The distribution of their blood groupings, however, supplies evidence that points in the contrary direction (page 15). The high cephalo-facial index of 98·4, especially when considered in connexion with the absolute width of the head and face, of which measurements it is a product, loudly proclaims the Fond-du-lac band to be much more nearly pure than are the other two.

These Indians have been dealt with first by bands; secondly, those "assumed to be pure" Chipewyan have been contrasted with those who are Chipewyan-white breeds. In this second method of grouping the opinions of the interpreters, which were based on a personal knowledge of the people, were allowed to guide us in making the selection. It becomes evident from a consideration of their general characteristics, teeth, blood, and physical proportions, that those "assumed to be pure" are actually slightly more mixed than the Fond-du-lac band as a whole. As no band of Indians can very well nowadays be totally denied all freedom from white admixture —for in the nature of things some white or partly white persons must be presumed to have married into every band—it follows that the testimony even of informed and well meaning interpreters is not to be accepted without reservation.

A larger percentage of convex noses, a larger percentage of dark eyes, and a larger percentage of persons with sound teeth were seen this year in the northern part of Alberta than last year in the northern part of Manitoba.

The accompanying table of Means and Probable Errors of Means contains the very essence of that part of the report which deals with the physical proportions.

Table XI

Summary of Means and Probable Errors of Means

	Chipewyan					Cree	
	Males					Female	Male
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
Stature	164·7 ±0·78	167·1 ±1·27	170·3 ±0·72	166·4 ±0·67	171·1 ±1·11	150·9 ±0·76	161·0 ±0·91
Sitting height	88·7 ±0·30	90·8 ±0·51	89·0 ±0·46	89·4 ±0·30	89·7 ±0·47	82·4 ±0·52	89·1 ±0·55
Sitting index	53·9 ±0·26	54·5 ±0·35	52·5 ±0·20	53·8 ±0·22	52·3 ±0·29	54·8 ±0·29	55·8 ±0·23
Cephalic index	78·8 ±0·23	79·6 ±0·41	80·1 ±0·36	79·3 ±0·23	80·4 ±0·40	79·6 ±0·25	77·6 ±0·26
Glab. occipital	193·8 ±0·68	194·8 ±1·23	191·8 ±0·75	193·5 ±0·56	193·1 ±0·72	186·6 ±0·58	193·2 ±0·67
Biparietal	152·9 ±0·54	155·2 ±0·63	154·0 ±0·64	153·7 ±0·44	155·2 ±0·71	148·6 ±0·52	150·0 ±0·63
Bizygomatic	150·0 ±0·58	149·0 ±0·62	147·9 ±0·61	149·6 ±0·50	146·1 ±0·46	141·9 ±0·74	144·6 ±0·39
Bipar. bizyg. index	98·4 ±0·31	95·9 ±0·41	95·9 ±0·35	97·6 ±0·25	94·3 ±0·32	95·5 ±0·42	96·6 ±0·31
Front min	104·6 ±0·70	105·2 ±0·95	105·1 ±0·56	104·2 ±0·51	105·6 ±0·68	102·4 ±0·53	103·2 ±0·63
Menton-crinion	186·6 ±0·96	191·3 ±1·52	187·4 ±0·86	187·6 ±0·83	186·8 ±1·20	180·8 ±1·13	184·0 ±0·97
Menton-nasion	124·1 ±0·78	127·8 ±1·29	123·9 ±0·65	125·3 ±0·68	124·3 ±0·87	120·1 ±0·77	124·6 ±0·83
Facial index	82·6 ±0·41	85·4 ±0·84	84·0 ±0·59	83·8 ±0·47	84·8 ±0·62	84·9 ±0·44	86·1 ±0·44
Upper lip (length)	19·2 ±0·54	19·5 ±0·42	16·8 ±0·29	19·2 ±0·31	16·9 ±0·37	....	19·7 ±0·41
Nose height	54·0 ±0·39	57·2 ±0·52	54·4 ±0·32	55·1 ±0·31	53·7 ±0·57	51·5 ±0·63	54·7 ±0·37
Nose width	39·4 ±0·38	38·7 ±0·40	38·9 ±0·52	39·7 ±0·33	38·8 ±0·44	36·2 ±0·33	38·2 ±0·42
Nose index	72·9 ±0·84	68·7 ±1·13	72·0 ±1·01	71·9 ±0·71	73·6 ±1·07	71·5 ±1·19	69·2 ±1·01
Mouth length	62·3 ±0·31	63·8 ±0·82	60·2 ±0·50	62·2 ±0·32	61·3 ±0·53	59·1 ±0·50	60·0 ±0·45
Ear length	66·1 ±0·63	66·0 ±0·83	65·9 ±0·61	67·0 ±0·51	67·0 ±0·75	....	65·6 ±0·59
Ear width	37·3 ±0·30	36·3 ±0·33	35·4 ±0·32	36·8 ±0·23	35·3 ±0·37	....	35·2 ±0·28
Ear index	56·9 ±0·57	54·8 ±0·63	53·6 ±0·58	55·8 ±0·47	53·6 ±0·54	....	53·4 ±0·52
Hand length	189·9 ±0·81	191·7 ±1·37	189·5 ±1·27	189·1 ±0·76	194·6 ±1·19	177·5 ±0·99	191·4 ±1·02
Hand width	88·9 ±0·52	90·8 ±0·57	88·4 ±0·43	88·9 ±0·38	90·9 ±0·57	80·6 ±0·48	90·1 ±0·57
Hand index	47·2 ±0·25	47·1 ±0·29	46·7 ±0·25	47·0 ±0·19	46·9 ±0·26	45·7 ±0·30	47·3 ±0·31
Numbers (approx.)	33	15	24	44	21	21	25

The Chipewyan Indians are short in stature; the Cree and Saulteaux measured last year were tall. The similarities in the measurements of the Cree investigated this year at Chipewyan and those last year at Oxford House are dealt with on page 24. The similarities are, in most cases, surprisingly close. In the few respects in which these two bands of Cree differ from each other they resemble, respectively, neighbouring tribes:

the Chipewyan Cree resemble the Fond-du-lac Chipewyans of Athapascan stock, and the Oxford House Cree resemble the Saulteaux at Island lake, who, like the Cree, are of Algonquian stock. This may point to the fact that both the Fond-du-lac Chipewyans and the Chipewyan Cree are more pure than the Oxford House Cree; and that the Island Lake Saulteaux may, moreover, be more mixed with white blood than is supposed. If this be the case, then we are advised as to what physical proportions Indian blood dominates; and what white blood.

Both bands of Cree have finer hair and poorer teeth than the Fond-du-lac Chipewyans. The blood groups of each of the thirty-three Cree examined belong to group O (Jansky, 1). These Cree, therefore, are universal donors. Whether this is by coincidence or not, further data will reveal.

Somewhat tentatively and on meagre data the males and females of the three great stocks in Canada, namely, Athapascan, Algonquian, and Siouan are compared in tables IX and X. It would appear that the most noteworthy differences between the physical proportions of the men of these three stocks is expressed by their cephalo-facial indices, which indices, however, must not be considered without paying due regard to the diameters of the skull from which they are derived.

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FREQUENCY DISTRIBUTION TABLES

Frequency Distribution of Stature

Stature in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
1,405						3	
1,435						1	
1,465						4	1
1,495						2	1
1,525	1	1		1		6	2
1,555	6	1		6	1	4	5
1,585	5	1		5	1		3
1,615	5	2	2	4	3		3
1,645	3	3	7	9	3		2
1,675	3	1	4	6	1		4
1,705	4	1	4	7	0		1
1,735	4	3	3	3	6		
1,765		1	1	2	2		
1,795			2	1	3		
Mean	164·7	167·1	170·3	166·4	171·1	150·9	161·0
σ	6·46	7·05	5·15	6·57	7·36	5·06	6·36
E_m	0·78	1·27	0·72	0·67	1·11	0·76	0·91
V	3·92	4·22	3·02	3·95	4·30	3·36	3·95
No	31	14	23	44	20	20	22

Frequency Distribution of Sitting Height

Sitting height in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
768						1	
783						1	
798						4	1
813						2	0
828			2		2	2	1
843	2	2	3	5	1	2	1
858	8	0	2	6	1	1	4
873	4	0	5	5	1	1	4
888	5	2	2	7	3		3
903	5	5	3	7	7		4
918	3	3	3	8	2		0
933		1	3	1	2		2
948		1		1			1
963							1
Mean	88·7	90·8	89·0	89·4	89·7	82·4	89·1
σ	2·29	2·83	3·30	2·79	3·05	2·86	3·82
E_m	0·30	0·51	0·46	0·30	0·47	0·52	0·55
V	2·58	3·11	3·71	3·11	3·40	3·47	4·28
No	27	14	23	40	19	14	22

Frequency Distribution of Index of Sitting Height

Index	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
49	1	.....	2	2	2	.....	.....
51	6	3	8	9	11	1	.....
53	9	3	12	15	2	5	5
55	9	6	1	10	4	6	10
57	2	2	.....	4	.....	2	6
59	.....	.....	.....	.....	.....	.....	1
Mean	53·9	54·5	52·5	53·8	52·3	54·8	55·8
σ	1·97	1·96	1·43	2·06	1·87	1·62	1·63
E_m	0·26	0·35	0·20	0·22	0·29	0·29	0·23
V	3·65	3·60	2·72	3·83	3·58	2·96	2·92
No	27	14	23	40	19	14	22

Frequency Distribution of Cephalic Index

Index	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
73	.....	1	1	1	.....	.....	1
75	3	0	0	3	2	1	7
77	11	4	5	12	3	3	8
79	14	2	8	13	7	12	8
81	2	8	7	13	5	4	1
83	2	.....	1	0	3	1	.....
85	.....	.....	2	1	2	.....	.....
Mean	78·8	79·6	80·1	79·3	80·4	79·6	77·6
σ	1·91	2·36	2·61	2·25	2·75	1·69	1·92
E_m	0·23	0·41	0·36	0·23	0·40	0·25	0·26
V	2·43	2·97	3·26	2·84	3·41	2·12	2·47
No	32	15	24	43	22	21	25

Frequency Distribution of Length of Head (Glabella ad maximum)

Length of head in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
180	2	1	2	2	.....	3	.....
183	1	0	1	1	2	6	1
186	1	1	2	3	1	7	6
189	5	4	7	9	6	2	1
192	11	2	6	11	5	2	5
195	3	2	2	7	3	1	8
198	5	1	2	5	3	.....	2
201	3	2	2	4	2	.....	2
204	1	1	.....	1	.....	.....	.....
207	.....	1	.....	.....	.....	.....	.....
M	193·8	194·8	191·8	193·5	193·1	186·6	193·2
σ	5·66	7·08	5·47	5·41	4·99	3·96	4·94
E_m	0·68	1·23	0·75	0·56	0·72	0·58	0·67
V	2·92	3·64	2·85	2·80	2·59	2·12	2·56
No	32	15	24	43	22	21	25

Frequency Distribution of Width of Head (Biparietal maximum)

Width of head in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
141	1	.....	.....	1	.....	1	4
144	1	.....	.....	1	.....	5	1
147	5	2	6	6	5	8	6
150	8	0	4	7	1	4	5
153	11	6	4	15	5	2	6
156	3	4	5	8	4	1	3
159	2	3	4	5	5	.....	.....
162	2	.....	1	1	2	.....	.....
Mean	152·9	155·2	154·0	153·7	155·2	148·6	150·0
σ	4·60	3·60	4·66	4·35	4·93	3·54	4·70
E_m	0·54	0·63	0·64	0·44	0·71	0·52	0·63
V	3·01	2·32	3·03	2·83	3·17	2·38	3·13
No	33	15	24	44	22	21	25

Frequency Distribution of Width of Face (Bizygomatic maximum)

Width of face in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
132	.....	.....	.....	.....	.....	1	.....
135	.....	.....	.....	.....	.....	3	.....
138	1	.....	1	2	1	5	2
141	1	.....	2	3	4	6	7
144	6	3	7	5	6	2	8
147	9	7	7	12	8	1	8
150	6	4	3	10	3	3	.....
153	5	0	2	6	.....	.....	.....
156	3	0	2	5	.....	.....	.....
159	2	1	.....	1	.....	.....	.....
Mean	150·0	149·0	147·9	149·6	146·1	141·9	144·6
σ	4·94	3·58	4·46	4·89	3·20	5·03	2·86
E_m	0·58	0·62	0·61	0·50	0·46	0·74	0·39
V	3·29	2·40	3·01	3·27	2·19	3·54	1·97
No	33	15	24	44	22	21	25

Frequency Distribution of Biparietal-Bizygomatic Index

Index	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
87	.....	.....	.....	.....	.....	1	.....
89	.....	.....	1	.....	1	0	.....
91	1	.....	1	1	5	2	.....
93	2	5	4	4	3	4	5
95	5	5	8	10	10	3	8
97	6	3	6	11	3	10	6
99	12	1	4	13	.....	1	5
101	7	1	.....	5	.....	.....	1
Mean	98·4	95·9	95·9	97·6	94·3	95·5	96·6
σ	2·61	2·33	2·52	2·49	2·23	2·83	2·27
E_m	0·31	0·41	0·35	0·25	0·32	0·42	0·31
V	2·65	2·43	2·62	2·55	2·36	2·96	2·35
No	33	15	24	44	22	21	25

Frequency Distribution of Width of Forehead (Frontal Minimum)

Width of forehead in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
91							1
94		1		1		1	0
97	7	2	3	7	3	2	5
100	9	1	4	10	1	7	6
103	5	4	4	10	5	6	3
106	4	3	7	8	4	2	8
109	3	1	6	4	5	1	1
112	3	3		3	1		1
115	0			0			
118	2			1			
Mean	104·6	105·2	105·1	104·2	105·6	102·4	103·2
σ	5·93	5·46	4·04	5·01	4·39	3·42	4·69
E_m	0·70	0·95	0·56	0·51	0·68	0·53	0·63
V	5·67	5·19	3·84	4·81	4·16	3·34	4·54
No	33	15	24	44	19	19	25

Frequency Distribution of Length of Face (Menton-Crinion)

Length of face in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
160						1	1
165						0	0
170	1			1	2	3	0
175	6	2	3	6	3	4	4
180	6	2	5	10	4	8	10
185	11	2	6	11	3	2	3
190	4	2	8	7	6	2	6
195	3	5	1	6	3	1	1
200	1	1	1	2	1		
205	0	1		0			
210	1			1			
Mean	186·6	191·3	187·4	187·6	186·8	180·8	184·0
σ	8·20	8·73	6·28	8·13	8·32	7·70	7·21
E_m	0·96	1·52	0·86	0·83	1·20	1·13	0·97
V	4·40	4·56	3·35	4·34	4·46	4·26	3·92
No	33	15	24	44	22	21	25

Frequency Distribution of Length of Face (Menton-Nasion)

Length of face in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
107	.....	.....	.....	.....	.....	1	.....
110	.....	.....	.....	.....	.....	0	.....
113	2	1	1	1	3	3	1
116	4	2	2	6	3	5	4
119	7	0	4	8	3	1	3
122	7	1	7	7	3	8	7
125	2	3	4	5	3	1	2
128	9	2	5	9	5	2	1
131	0	2	0	3	1	.....	5
134	0	3	1	3	1	.....	2
137	0	0	.....	0	.....	.....	.....
140	1	1	.....	1	.....	.....	.....
143	1	.....	.....	1	.....	.....	.....
M	124·1	127·8	123·9	125·3	124·3	120·1	124·6
σ	6·60	7·41	4·70	6·64	6·06	5·19	6·13
E_m	0·78	1·29	0·65	0·68	0·87	0·77	0·83
V	5·32	5·80	3·80	5·30	4·88	4·32	4·92
No	33	15	24	44	22	21	25

Frequency Distribution of Facial Index (Menton-Nasion, Bizygomatic Maximum)

Index	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
76	3	1	1	3	1	.....	1
79	11	2	8	15	5	3	0
82	9	5	5	10	5	6	6
85	8	2	5	7	5	9	10
88	1	1	2	2	3	2	6
91	1	4	3	7	3	1	2
Mean	82·6	85·4	84·0	83·8	84·8	84·9	86·1
σ	3·45	4·80	4·30	4·57	4·31	3·00	3·23
E_m	0·41	0·84	0·59	0·47	0·62	0·44	0·44
V	4·17	5·62	5·12	5·46	5·08	3·53	3·75
No	33	15	24	44	22	21	25

Frequency Distribution of Length of Upper Lip

Length of upper lip in mm.	Chipewyan						Cree
	Males					Females	Male
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
11	.....	.....	.....	.....	.....	.....	1
13	1	.....	2	.....	2	.....	0
15	2	1	8	5	3	.....	2
17	3	3	7	8	7	.....	4
19	2	6	3	8	1	.....	10
21	4	1	1	5	1	.....	4
23	2	2	.....	4	.....	.....	2
25	.....	.....	.....	.....	.....	.....	2
M	19·2	19·5	16·8	19·2	16·9	.....	19·7
σ	3·01	2·22	1·98	2·53	2·06	.....	3·04
E_m	0·54	0·42	0·29	0·31	0·37	.....	0·41
V	15·67	11·38	11·79	13·22	12·17	.....	15·47
No	14	13	21	30	14	.....	25

Frequency Distribution of Height of Nose

Height of nose in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
41	.....	.....	.....	.....	.....	1	.....
44	.....	.....	.....	.....	.....	2	.....
47	4	.....	1	1	4	2	.....
50	5	.....	3	6	5	7	6
53	14	5	12	20	4	4	9
56	7	6	8	12	8	4	8
59	3	2	.....	3	0	.....	2
62	.....	2	.....	2	1	.....	.....
Mean	54·0	57·2	54·4	55·1	53·7	51·5	54·7
σ	3·30	2·99	2·34	3·07	3·93	4·17	2·72
E_m	0·39	0·52	0·32	0·31	0·57	0·63	0·37
V	6·12	5·23	4·31	5·58	7·32	8·10	4·97
No	33	15	24	44	22	20	25

Frequency Distribution of Width of Nose

Width of nose in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
31	.....	.....	2	1	2	.....	1
33	1	.....	1	0	4	5	2
35	5	1	3	5	3	7	2
37	10	8	5	13	7	5	11
39	5	4	4	8	4	2	4
41	5	1	4	6	1	1	2
43	4	0	4	7	1	.....	2
45	3	1	1	4	.....	.....	1
Mean	39·4	38·7	38·9	39·7	38·8	36·2	38·2
σ	3·25	2·29	3·76	3·28	3·05	2·22	3·14
E_m	0·38	0·40	0·52	0·33	0·44	0·33	0·42
V	8·23	5·91	9·67	8·26	7·86	6·12	8·23
No	33	15	24	44	22	20	25

Frequency Distribution of Nasal Index

Index	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
55	.....	.....	1	1	.....	1	3
60	4	4	4	5	3	4	2
65	9	6	3	13	4	3	10
70	5	3	6	8	5	4	5
75	9	1	7	10	5	5	2
80	4	0	2	6	3	2	2
85	2	1	1	1	2	1	1
Mean	72·9	68·7	72·0	71·9	73·6	71·5	69·2
σ	7·12	6·50	7·36	6·95	7·45	7·89	7·49
E_m	0·84	1·13	1·01	0·71	1·07	1·19	1·01
V	9·77	9·46	10·22	9·67	10·12	10·04	10·83
No	33	15	24	44	22	20	25

Frequency Distribution of Width of Mouth

Width of mouth in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
48	.....	.....	1	.....	.....	.....	.....
51	.....	.....	0	.....	.....	1	1
54	.....	1	0	.....	1	3	2
57	4	1	9	8	5	5	8
60	15	5	7	20	9	9	8
63	11	3	5	9	5	0	5
66	2	2	1	5	0	1	1
69	1	2	.....	2	0	.....	.....
72	.....	1	.....	.....	1	.....	.....
Mean	62·3	63·8	60·2	62·2	61·3	59·1	60·0
σ	2·67	4·71	3·56	3·15	3·57	3·26	3·36
E_m	0·31	0·82	0·50	0·32	0·53	0·50	0·45
V	4·28	7·38	5·92	5·06	5·83	5·51	5·60
No	33	15	23	44	21	19	25

Frequency Distribution of Length of Ear

Length of ear in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
56	2	1	.....	.....	1	.....	1
59	5	1	5	6	2	.....	3
62	7	3	5	10	3	.....	6
65	6	6	5	9	7	.....	8
68	7	2	6	10	3	.....	4
71	3	1	1	4	1	.....	1
74	1	0	2	2	4	.....	2
77	2	1	.....	3	.....	.....	.....
Mean	66·1	66·0	65·9	67·0	67·0	.....	65·6
σ	5·35	4·78	4·46	4·99	5·10	.....	4·35
E_m	0·63	0·83	0·61	0·51	0·75	.....	0·59
V	8·10	7·23	6·77	7·45	7·61	.....	6·63
No	33	15	24	44	21	.....	25

Frequency Distribution of Width of Ear

Width of ear in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
29							1
31			3		2		1
33	5	3	5	7	8		6
35	9	5	9	14	5		11
37	8	5	4	13	2		5
39	8	2	3	8	4		1
41	2			1			
43	1			1			
Mean	37·3	36·3	35·4	36·8	35·3		35·2
σ	2·55	1·90	2·34	2·30	2·54		2·09
E_m	0·30	0·33	0·32	0·23	0·37		0·28
V	6·84	5·25	6·62	6·23	7·19		5·95
No	33	15	24	44	21		25

Frequency Distribution of Ear Index

Index	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
43		1		1			
46	1	0	2	3	2		3
49	1	0	6	4	4		4
52	7	5	7	12	7		9
55	13	6	6	14	4		7
58	6	3	1	5	4		0
61	2		1	2			2
64	2		1	3			
67	0						
70	0						
73	1						
Mean	56·9	54·8	53·6	55·0	53·6		53·4
σ	4·81	3·60	4·24	4·65	3·66		3·83
E_m	0·57	0·63	0·58	0·47	0·54		0·52
V	8·46	6·57	7·91	8·47	6·83		7·17
No	33	15	24	44	21		25

Frequency Distribution of Length of Hand

Length of hand in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
160						1	
165			1	1		1	
170			1	1		5	
175	1	1	0	1		5	1
180	6	2	5	6	4	7	5
185	10	3	5	15	0	1	3
190	10	3	5	12	8	1	8
195	3	4	2	4	2		4
200	1	1	5	3	4		3
205	2	1		1	3		1
M	189·9	191·7	189·5	189·1	194·6	177·5	191·4
σ	6·86	7·85	9·24	7·49	8·11	6·71	7·53
E_m	0·81	1·37	1·27	0·76	1·19	0·99	1·02
V	3·61	4·09	4·88	3·96	4·17	3·78	3·93
No	33	15	24	44	21	21	25

Frequency Distribution of Width of Hand

Width of hand in mm.	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
76						8	
79	2			1		4	
82	5		2	3		6	3
85	5	3	8	14	6	3	5
88	5	4	9	9	4		4
91	12	4	3	12	4		7
94	4	4	2	5	6		5
97					1		1
M	88·9	90·8	88·4	88·9	90·9	80·6	90·1
σ	4·40	3·25	3·12	3·70	3·87	3·29	4·23
E_m	0·52	0·57	0·43	0·38	0·57	0·48	0·57
V	4·95	3·58	3·53	4·16	4·26	4·08	4·70
No	33	15	24	44	21	21	25

Frequency Distribution of Hand Index

Index	Chipewyan						Cree
	Males					Females	Males
	Fond-du-lac	Chipewyan	Fitzgerald	Pure	Half	Fond-du-lac	Chipewyan
41	1	.....	.....	.....	.....	1	1
43	0	1	2	3	2	4	2
45	13	4	10	16	6	10	4
47	10	7	9	16	9	5	12
49	7	3	2	8	4	0	4
51	2	.....	1	1	.....	1	2
Mean	47·2	47·1	46·7	47·0	46·9	45·7	47·3
σ	2·10	1·67	1·82	1·83	1·76	2·04	2·29
P_m	0·25	0·29	0·25	0·19	0·26	0·30	0·31
V	4·44	3·54	3·90	3·89	3·75	4·46	4·84
No	33	15	24	44	21	21	25

APPENDICES

Appendix I

Particulars of Fond-du-lac Men

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose			Ear			Hand		Blood group	Hair[1]			Colour of eye[2]	Remarks
										Height	Width	Mouth (length)	Length	Width	Upper lip (length)	Length	Width		Moustache	Beard	Cheek		
										AGED 20 TO 59 YEARS													
51	53	1531	861·0	192·0	153·0	144·5	104·0	117·0	174·5	47	40	63	65	39	..	185	83	0	2	1	0	D	
52	40	1689	917·0	200·0	153·0	154·0	·97·0	117·0	178·0	58	44	68	65	42	..	188	89	0	2	1	0	D	Brother is said to have a brown moustache
53	27	1564	880·0	194·0	150·0	144·0	101·0	116·0	184·0	55	36	62	62	37	..	186	86	A	0	0	0	D	Cousin of 56 and 72
54	28	1667	905·0	193·0	162·0	147·0	111·0	120·0	174·0	52	40	60	64	36	17	205	96	B	1	0	0	D	Brothers: father and mother have some white blood
55	26	1572	863·0	193·0	154·0	147·0	119·0	118·5	175·0	49	38	57	61	36	..	206	96	B	0	0	1	M	
56	56	1607	.....	198·0	155·0	157·0	109·0	142·0	203·5	59	45	59	68	39	23	192	92	A	1	1	0	D	Cousin of 53 and 72
58	55	1572	860·0	201·0	158·0	154·5	112·0	128·0	188·0	55	44	60	77	40	..	183	91	0	2	1	0	D	
59	34	1589	.....	191·5	152·5	151·5	101·0	130·0	196·0	55	38	70	70	40	21	190	91	B	1	0	0	D-Bl.	
60	34	1603	863·0	195·5	155·5	150·5	104·0	119·0	188·0	51	42	63	60	38	..	193	87	0	1	0	0	D	Children of brothers
61	36	1605	887·5	192·0	152·0	152·0	118·5	119·5	187·0	55	45	62	61	33	..	187	93	0	1	1	0	D	
62	32	1647	930·0	198·0	157·0	158·5	112·0	129·0	184·0	54	37	65	77	36	..	186	94	A	1	1	0	D	
63	26	1582	902·0	182·0	140·5	139·0	98·0	121·5	184·5	57	40	60	64	38	..	185	91	0	0	0	0	D	
64	30	1556	.....	191·5	149·0	149·0	99·0	124·0	192·0	51	35	62	70	38	..	180	82	B	0	0	0	D	Brother said to have a heavy black moustache
67	32	1617	897·5	189·0	147·0	148·0	97·0	129·0	186·0	55	36	61	62	34	..	196	92	0	1	0	0	0D-M	
68	27	....	.....	181·0	147·0	141·0	99·0	122·5	191·0	54	34	60	56	34	..	181	81	0	0	0	0	D	
69	34	1584	871·0	195·0	153·5	149·0	106·0	115·0	177·0	51	39	61	64	36	..	191	93	0	1	0	0	D	
70	37	....	.....	194·0	151·5	148·0	107·5	118·0	184·0	55	43	61	66	36	..	183	84	0	0	0	0	D	
71	38	1727	930·0	206·0	160·0	157·5	99·0	143·0	210·0	59	37	60	73	37	..	204	91	0	1	0	0	D	
72	52	1629	910·0	191·0	149·5	148·0	102·0	127·0	188·0	57	39	60	68	36	..	191	87	A	1	1	0	D-M	Cousin of 53 and 56
73	55	1696	927·0	202·0	153·0	152·0	100·0	120·0	178·0	54	45	68	75	44	..	188	92	B	1	1	0	D	
74	28	1603	846·0	185·0	147·5	146·0	100·0	127·5	189·0	54	38	65	67	35	..	184	91	A	1	1	0	D	
75	35	1632	858·0	198·0	154·0	155·0	103·0	128·0	193·5	57	36	65	66	36	19	197	92	0	0	0	0	D	
76	30	1705	904·0	190·0	152·0	154·0	111·0	128·0	184·0	56	42	63	56	42	..	197	91	0	0	0	0	D	
77	47	1735	885·0	191·9	150·0	148·5	99·0	115·0	178·5	48	41	65	68	40	22	190	90	A	1	1	0	D-M	
78	32	1641	880·0	192·0	152·0	144·5	102·0	124·0	196·0	60	37	59	66	37	13	178	90	0	1	1	0	D-M	
79	45	1755	898·0	192·0	159·5	158·0	113·0	126·0	189·0	58	42	63	73	40	18	185	83	0	2	1	0	D	
80	34	1721	881·0	192·0	154·0	151·0	106·0	124·0	190·0	53	38	59	61	33	21	194	94	....	2	2	0	D	
81	50	1638	857·0	.....	162·0	151·0	103·0	124·0	183·0	54	37	61	71	39	23	182	81	....	1	1	0	D	
82	48	1721	891·0	189·0	154·5	154·0	104·0	130·0	189·0	58	42	65	69	38	21	190	90	0	1	1	0	D	
83	23	1739	.....	196·0	157·0	159·0	107·5	129·0	195·0	52	35	61	69	38	15	193	89	....	0	0	0	D-Bl.	
84	38	1762	865·0	201·5	151·5	144·5	102·0	124·0	188·0	55	37	62	64	36	16	194	82	0	1	1	0	D	
85	32	1692	910·0	197·5	150·5	148·5	102·0	119·0	187·0	55	43	64	63	40	17	186	86	....	1	1	0	D	
86	27	1657	863·0	187·5	145·5	144·0	100·0	119·0	183·5	48	37	63	61	33	20	187	87	....	1	1	0	D	

[1]Hair: 0=absent; 1=very scanty; 2=appreciable; 3=marked amount.
[2]Eye: Bl.=black; D=dark brown; M=medium brown; L=light brown; G=grey, greenish grey, or blue.

Appendix II

Particulars of Chipewyan Men at Chipewyan

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose		Ear			Hand		Blood group	Hair			Colour of eye	Remarks
										Height	Width	Mouth (length)	Length	Width	Upper lip (length)	Length	Width		Moustache	Beard	Cheek		
AGED 20 TO 59 YEARS																							
2	54	1615	931·0	189·0	153·5	148·0	98·0	128·5	187·0	58	37	63	63	36	22	195	94	0	3	1	0	D	
5	50	1780	934·0	208·5	161·0	149·0	112·0	130·0	198·0	56	40	69	70	37	20	197	93	B	1	1	0	D-M	Said to have white blood
6	48	1577	912·0	182·5	149·0	146·5	95·0	116·0	178·0	57	39	63	69	37	18	185	85	0	1	1	0	D	
7	30	1678	915·0	205·0	158·5	152·0	107·0	141·0	206·0	60	38	55	65	37	19	197	92	0	1	1	0	Bl.-D	Said to have French blood
8	23	1728	958·0	196·0	157·0	148·0	102·0	132·0	198·0	53	41	60	71	39	24	204	89	....	0	0	0	D	
9	58	....	.....	200·0	154·0	147·0	113·0	115·0	195·0	54	46	73	67	40	..	192	94	....	3	1	1	M	Some Scottish blood
10	23	1529	856·0	194·0	152·5	146·5	107·0	135·0	194·0	54	36	58	63	34	19	189	86	....	0	0	0	D-M	
11	24	1610	902·0	190·5	157·0	152·0	112·0	125·0	192·0	55	38	61	63	36	17	189	89	....	2	1	0	D-M	
12	28	1667	915·0	201·0	149·0	147·0	107·0	136·0	195·0	58	38	68	67	37	19	207	94	....	2	2	0	D-M	
14	54	1639	912·0	193·0	159·0	149·5	105·0	126·0	181·0	56	38	64	57	33	..	184	91	....	3	1	0	D	Some Scottish blood
17	42	1751	907·0	197·0	160·0	161·0	104·0	131·0	201·0	56	40	69	78	35	17	195	90	0	2	1	0	D	
20	45	1758	922·0	201·0	156·0	151·5	103·0	127·0	186·0	62	38	62	67	35	15	191	92	0	2	1	0	D-M	
21	28	1737	930·0	191·0	155·5	146·0	111·0	134·0	197·0	62	37	61	66	34	23	199	95	0	1	1	0	D	Son of 18, looks partly white
22	34	1652	845·0	190·0	153·5	144·5	104·0	118·0	174·5	53	38	60	60	35	20	178	86	0	2	2	0	D	Looks partly white
23	45	1658	894·0	187·5	153·0	147·5	99·0	124·5	184·0	61	40	68	67	38	19	183	88	0	2	2	0	M	
AGED 60 YEARS AND OVER																							
1	63	1604	873·0	187·5	152·0	147·5	107·5	123·0	185·0	57	44	60	65	32	..	188	87	0	3	3	1	DullG	Some French blood
13	68	....	.....	191·0	156·5	153·0	93·5	129·0	187·0	57	43	63	64	36	20	179	87	....	1	1	0	D	
15	68	....	.....	202·5	159·0	149·0	104·0	127·0	201·0	57	45	67	70	34	19	189	95	....	1	1	0	D	Some French blood
16	68	.....	.....	178·5	153·0	144·0	102·0	.....	178·0	55	35	56	71	38	..	183	85	....	3	2	0	D-M	
18	68	1759	920·0	199·0	156·5	151·0	115·0	127·0	177·0	56	39	62	70	40	23	193	89	0	1	1	0	D-M	Father of 21
19	70	....	.....	194·0	157·0	144·5	94·0	121·0	182·0	59	38	60	69	38	21	175	82	0	3	..	0	M	

Appendix III

Particulars of Fitzgerald and Fort Smith Men

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose			Ear			Hand		Blood group	Hair			Colour of eye	Remarks
										Height	Width	Mouth (length)	Length	Width	Upper lip (length)	Length	Width		Moustache	Beard	Cheek		
AGED 20 TO 59 YEARS																							
1	58	1678	862	191·0	154·5	152·0	102·0	120·0	179	57	43	65	61	35	1	182	88	O	3	2	0	D-M	
4	50	1647	864	195·5	156·5	156·0	111·0	118·0	183	54	45	59	67	35	18	173	85	O	2	2	0	D-Bl.	
6	36	1710	911	186·5	159·5	157·5	105·0	125	195	55	38	59	70	33	19	194	93	O	1	1	0	D	
7	50	1675	885	191·0	150·5	150·0	109·5	123·0	189	54	42	62	72	37	20	187	86	O	1	1	0	M	Brothers
9	38	1709	900	196·5	161·0	154·5	108	122	190	55	39	60	69	35	18	168	82	O	2	1	0	D	Brothers
12	28	1660	882	193·5	159·0	154·5	108·0	122·0	185	53	43	59	68	35	17	189	84	O	1	1	0	D	
13	56	1805	933	198·0	158·0	152·0	107·0	122·0	190	55	42	67	75	38	1	200	95	O	2	2	0	M	Brother of 10
14	26	1670	880	191·5	149·0	141·0	102·0	129·0	186	54	40	62	64	34	21	185	87	O	1	1	0	D-M	
15	24	1647	887	182·0	149·0	147·5	102·0	128·0	194	55	32	57	62	39	15	185	85	O	0	0	0	D	Stepbrothers
16	36	1669	849	188·0	146·5	141·0	97·0	128·5	181	58	44	61	61	39	15	197	89	O	1	1	0	.....	Stepbrothers
19	22	1727	923	193·0	154·5	148·0	108·0	119·0	175	47	41	63	61	35	15	185	85	O	0	0	0	D	Son of 1
26	48	1685	849	192·0	150·0	147·5	101·0	117·0	182	52	38	59	67	38	16	192	88	O	2	2	1	.....	
2	32	1779	936	203·0	155·5	146·0	108·0	126·0	193	56	43	62	64	32	16	202	87	O	1	1	0	L	
3	38	1802	925	202·5	150·5	147·0	105·0	134·0	204	53	32	59	62	36	20	195	90	B	1	1	0	D-Bl.	
5	40	1617	835	182·5	147·5	144·5	99·0	114·0	187	54	35	60	66	35	17	181	86	O	2	2	0	D	
8	?	1708	878	192·0	149·0	146·5	103·0	125·0	190	56	38	50	59	31	14	200	89	O	2	1	0	.....	
20	28	1654	850	183·0	147·0	140·0	105·0	122	182	53	37	64	60	34	16	181	85	O	0	0	0	D-M	
21	38	1736	930	191·0	152·5	144·0	99·0	129·0	194	58	36	59	69	39	16	192	89	A	2	2	0	D-M	
23	58	1638	908	198·0	161·5	149·0	108·0	124·0	176	58	41	65	65	34	18	184	88	O	3	3	1	M	
24	54	1647	828	189·0	156·5	146·0	108·0	128·0	187	52	39	..	76	38	1	200	95	O	3	3	3	D-M	
25	44	.....	.....	191·0	153·0	145·5	109·0	119·0	189	51	39	64	68	32	16	190	90	O	2	2	2	G	
27	30	1744	896	189·0	161·0	145·0	111·0	125·0	192	57	36	60	69	34	17	202	91	O	1	1	0	D-M	
28	26	1692	914	194·0	155·0	145·0	110·0	118·5	184	53	38	57	64	35	18	183	93	O	1	1	0	D-M	
30	29	1752	936	190·0	156·5	148·0	111·0	124·5	191	56	34	59	65	35	14	193	88	O	2	2	1	M-L	
AGED 60 YEARS AND OVER																							
10	60	1749	897	198·5	162·0	152·5	113·0	124·0	204	57	43	69	70	38	1	195	91	O	2	1	0	D	
22	65	.....	.....	194·0	158·5	147·5	103·0	117·0	184	52	40	69	77	30	18	184	84	O	2	2	1	D	Half Cree, half Chipewyan

Appendix IV

Particulars of Women at Fond-du-lac, at Chipewyan, and at Fitzgerald and Fort Smith

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose: Height	Nose: Width	Mouth (length)	Ear: Length	Ear: Width	Upper lip (length)	Hand: Length	Hand: Width	Blood group	Hair: Moustache	Hair: Beard	Hair: Cheek	Colour of eye	Remarks
Aged 20 to 59 years																							
Fond-du-lac																							
1	22	1566	860	194·0	148·0	136·0	102·0	119·0	176·5	51	39	54	.....			189	79	....	.....			D	Looks partly white
2	30	1572	.....	186·0	152·5	150·0	105·0	122·0	182·5	57	36	.....				194	83	....	.....			D	Her son looks partly white
3	30	1557	.....	195·0	154·0	152·0	103·0	127·5	190·0	55	41	68	.....			184	84	....	.....			D	
4	26	1547	.....	183·5	147·0	142·0	100·0	123·0	181·0	49	37	59	.....			184	87	....	.....			D	
5	22	1492	.....	185·0	141·0	137·5	.....	118·5	175·0	48	34	62	.....			180	85	....	.....			D-Bl.	Father said to have brownish moustache
6	56	1460	.....	188·0	156·5	146·0	104·0	122·0	179·5	57	36	58	.....			176	84	....	.....			D	
7	36	1550	835	186·0	147·5	142·5	101·0	114·0	183·0	41	35	62	.....			184	82	....	.....			D	
8	?	1511	823	185·0	146·5	143·0	105·0	118·0	183·0	52	38	53	.....			172	87	....	.....			D	
9	32	1422	820	193·0	151·5	133·0	105·0	107·0	173·0	44	35	58	.....			168	78	....	.....			D	Father said to be slightly white
10	24	1427	800	184·0	146·0	140·5	.....	122·0	181·0	.....			.....			177	76	....	.....			D	" "
11	26	1487	.....	191·0	152·5	150·0	109·0	130·0	183·0	53	35	62	.....			177	78	....	.....			D	
12	40	1547	876	186·0	144·5	136·0	100·0	124·0	195·5	52	34	54	.....			180	81	....	.....			D	Mother of 13; sister of 14
13	22	1525	810	189·0	148·0	145·0	117·0	124·0	186·0	52	39	62	.....			181	83	....	.....			D	Daughter of 12
14	28	1567	843	187·5	150·0	147·0	107·0	124·0	187·0	50	38	61	.....			177	81	....	.....			D	Sister of 12
15	38	1406	780	183·0	144·0	136·5	96·5	114·0	164·0	44	35	55	.....			163	77	....	.....			D	Brother has a heavy moustache
16	28	1502	833	185·0	147·0	138·0	101·0	118·0	178·0	56	34	58	.....			184	82	....	.....			D	
17	30	1492	805	186·0	146·5	143·0	105·0	127·0	191·0	56	33	58	.....			178	76	....	.....			D	
18	54	1469	791	180·0	148·0	138·0	95·0	118·0	171·0	51	34	60	.....			173	77	....	.....			D	
19	38	1526	851	182·0	150·0	137·5	100·0	118·0	175·0	53	37	60	.....			172	78	....	.....			D-Bl.	
20	20	1538	800	180·0	146·5	138·5	97·0	115·0	172·0	50	37	60	.....			170	76	....	.....			D-Bl.	
21	40	....	.....	186	148·0	143·0	101·0	123·0	183·0	55	35	61	.....			174	81	....	.....			D	
Chipewyan																							
2	38	....	.....	183·0	153·0	143	105	121	177	52	35	58	.....			178	77	....	.....			D	
3	28	1620	833	181·0	144·5	135	107	118	183	51	33	51	.....			176	76	....	.....			D	Looks partly white
4	32	1527	828	182·5	153	145	101	108	166	45	36	55	.....			170	82	....	.....			D	Looks partly white
Fitzgerald and Fort Smith																							
1	32	1639	.....	188·0	151·0	144·0	105	115	174	51	34	47	.....			189	77	....	.....			D	Father is partly French
2	30	1617	855	184·0	143·5	142·5	101	119	187	47	37	60	.....			181	85	....	.....			M-D	
3	35	1537	.....	184·0	142·0	140·0	103	126	176	53	34	58	.....			173	73	....	.....			D	Sister of 5
4	35	1521	.....	184·5	144·5	141·0	100	118	176	55	33	56	.....			172	76	....	.....			D	
5	46	1582	.....	190	142·5	139·5	98	118	178	55	40	58	.....			175	79	....	.....			D	Sister of 3

Appendix V

Particulars of Cree Men at Chipewyan

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose			Ear			Hand		Blood group	Hair			Colour of eye	Remarks
										Height	Width	Mouth (length)	Length	Width	Upper lip (length)	Length	Width		Moustache	Beard	Cheek		
AGED 20 TO 59 YEARS																							
1	54	....	.....	196·0	148·5	148·5	97·0	131·0	183·5	57	41	60	74	35	21	194	98	O	1	1	0	D-M	Brother of 3 and 8, father of 2
2	20	1630	955	196·0	146·5	146·0	101·0	131·0	183·0	60	35	61	66	36	19	195	92	O	0	0	0	D	Son of 1
5	45	1666	912	199·0	155·5	147·5	112·0	121·0	184·0	52	45	65	62	38	20	190	92	O	1	1	0	?	Not pure. Leukoma
6	50	1619	883	197·0	154·0	144·5	108·0	123·0	195·0	58	38	57	61	33	23	189	86	O	1	1	0	D	
7	36	1622	882	197·5	147·0	144·0	105·5	123·0	177·0	51	40	58	67	35	23	197	94	O	1	1	0	D-Bl.	
8	50	1583	870	192·0	147·0	146·0	97·0	125·0	189·0	54	37	61	70	39	25	194	93	O	1	1	0	D	Brother of 1 and 3
9	50	1682	942	201·5	151·5	149·0	105·0	132·0	184·0	55	40	68	74	35	26	193	91	O	3	1	0	D	Not pure
10	25	1536	869	188·5	151·0	143·0	106·0	127·0	191·0	51	43	60	62	33	17	195	83	O	1	1	0	D	Brother of 13
11	..	....	.....	197·5	151·0	144·0	108·0	124·0	184·0	57	37	59	66	33	19	204	89	O	2	0	0	D	
13	30	....	.....	201·0	156·0	148·0	110·0	134·0	194·5	57	43	56	65	35	19	191	89	O	1	1	0	Bl.	Brother of 10
14	30	1699	942	194·0	155·5	148·5	102·0	130·5	190·5	58	37	63	65	37	15	197	96	O	1	1	0	D	Son of 15, brother of 12, pure Cree (Appendix IX)
16	35	1602	915	188·0	152·0	143·0	107·5	122·0	184·5	52	34	59	64	33	19	192	90	O	1	1	1	D	
17	44	1512	840	187·0	142·5	137·5	96·5	116·0	161·0	55	37	55	62	30	20	177	84	O	1	1	1	D	
18	45	1471	811	196·0	153·0	143·0	106·0	118·5	176·0	52	37	62	69	35	19	194	90	O	0	0	0	D	
19	26	1529	858	192·0	152·5	142·0	107·0	123·0	184·0	56	37	53	61	35	17	182	85	O	0	0	0	D	
21	28	1560	883	195·0	153·5	147·0	105·0	131·0	192·5	55	39	60	69	37	22	183	91	O	1	1	0	D	
23	26	1588	902	195·0	154·0	144·0	101·0	134·0	191·0	57	40	65	64	35	20	184	87	O	1	1	1	D	
24	30	1703	963	196·5	151·5	148·5	106·0	129·0	186·0	60	38	63	73	36	19	205	87	O	1	1	0	D	Some French blood
26	40	1556	890	188·0	143·0	143·0	99·0	122·0	183·0	57	33	58	64	32	21	182	93	O	0	0	0	D	
29	56	1591	882	188·0	148·0	143·5	101·0	117·0	186·0	54	32	59	65	34	15	189	92	O	1	0	0	D-M	
30	35	1557	867	193·5	148·0	142·5	98·0	119·0	178·0	54	35	64	57	35	21	189	86	O	0	0	0	D	
31	29	1579	845	187·0	141·0	139·5	102·5	119·5	181·5	55	38	61	61	33	20	183	83	O	1	1	0	D	
32	26	1701	911	186·0	147·5	144·5	100·0	118·0	176·0	51	41	60	67	37	12	202	94	O	0	0	0	D	Brothers
33	24	1722	913	185·0	141·0	142·0	92·5	123·0	184·0	55	37	59	66	36	17	193	95	O	0	0	0	D	Brothers
34	28	1674	896	192·0	154·0	148·0	103·0	113·0	190·0	55	37	57	70	37	18	200	96	O	..	1	0	D	
AGED 60 YEARS AND OVER																							
3	64	....	.....	194·0	151·0	144	96	127	184	60	41	58	62	39	21	186	92	O	1	0	0	D	Brother of 1 and 8
4	80	....	.....	197·0	149·0	146	102	117	184	53	40	60	63	34	19	178	78	O	1	1	0	D	
15	60	1664	914	191·0	151·5	153	107	125	186	56	41	61	71	36	20	200	94	O	1	1	0	D	Father of 14 and pure Cree boy 12
20	65	....	.....	187·5	143·0	139	98	120·0	187	55	36	55	62	32	20	174	85	O	1	1	0	D	
22	75	....	.....	188	147·5	141	99	122·0	172	52	35	54	60	36	18	184	88	O	1	1	0	D	
27	65	1522	880	205	150·5	150	99	118·5	186	49	44	65	72	37	..	183	88	O	3	0	0	D	Some white blood, brown moustache

Appendix VI

Particulars of the Assumedly Pure Chipewyan Men (Aged 20 to 59 years)

Of these: 18 are from Fond-du-lac, *See* Appendix I, Nos. 52, 53, 56, 58, 59, 60, 61, 62, 63, 64, 69, 71, 72, 73, 75, 81, 82, and 85.
11 " Chipewyan, " " II, Nos. 2, 6, 8, 10, 11, 12, 17, 20, 21, 22, and 23.
12 " Fitzgerald and Fort Smith, *See* Appendix III, Nos. 1, 4, 6, 7, 9, 12, 13, 14, 15, 16, 19, and 26.
3 " McMurray, for data *See* below:

44 in all

Particulars of Assumedly Pure Chipewyan Indians from McMurray

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose		Mouth (length)	Ear		Upper lip (length)	Hand		Blood group	Hair			Colour of eye	Remarks
										Height	Width		Length	Width		Length	Width		Moustache	Beard	Cheek		
AGED 20 TO 59 YEARS																							
5	48	1710	.....	192	145·5	140·0	103	120	180	57	43	60	69	33	22	182	86	B	2	1	1	M	
10	35	1777	928	189	150·0	146·0	103	127	184	52	36	60	64	37	17	194	91	O	2	2	1	M	
15	24	1784	893	194	157·5	143·5	106	131	196	52	38	58	65	34	20	192	85	B	1	1	0	D	

Appendix VII

Particulars of Chipewyan-White Breeds, Men

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose: Height	Nose: Width	Mouth (length)	Ear: Length	Ear: Width	Upper lip (length)	Hand: Length	Hand: Width	Blood group	Hair: Moustache	Hair: Beard	Hair: Cheek	Colour of eye	Remarks
AGED 20 TO 59 YEARS																							
Fitzgerald																							
5	40	1617	835	182·5	147·5	144·5	99	114	187	54	35	60	66	35	17	181	86	O	2	2	0	D	
20	28	1654	850	183·0	147·0	140·0	105	122	182	53	37	64	60	34	16	181	85	O	0	0	0	D–M	
23	58	1638	908	198·0	161·5	149·0	108	124	176	58	41	65	65	34	18	184	88	O	3	3	1	M	
24	54	1647	828	189·0	156·5	146·0	108	128	187	52	39	..	76	38	..	200	95	O	3	3	3	D–M	
25	44	....	.....	191·0	153·0	145·5	109	119	189	51	39	64	68	32	16	190	90	O	2	2	2	L–G	
27	30	1744	896	189·0	161·0	145·0	111	125	192	57	36	60	69	34	17	202	91	O	1	1	0	D–M	
30	29	1752	936	190·0	156·5	148·0	111	124	191	56	34	59	65	35	14	193	88	O	2	2	1	M–L	
Chipewyan																							
9	58	....	.....	200·0	154·0	147·0	113	115	195	54	46	73	67	40	..	192	94	....	3	1	1	M	
14	54	1639	912	193·0	159·0	149·5	105	126	181	56	38	64	57	33	..	184	91	....	3	1	0	D	
Fond-du-lac																							
54	28	1667	905	193·0	162·0	147·0	111	120	174	52	40	60	64	36	17	205	96	B	1	0	0	D	
55	26	1572	863	193·0	154·0	147·0	.....	118	175	49	38	57	61	36	..	206	96	B	1	1	1	M	
65	32	1610	901	198·0	158·0	150·0	.....	133	190	62	42	59	74	34	..	192	95	O	0	0	0	D	
McMurray																							
1	40	1692	.....	192·5	148·5	141·5	108	121	180	50	41	60	..	..	17	191	93	O	1	1	0	M	
8	45	1800	916	196·0	160·0	148·0	105	135	203	56	39	65	74	39	..	206	99	A	2	2	0	M–L	
9	28	1748	889	195·5	148·0	144·0	97	129	191	57	34	57	62	36	16	193	87	O	1	1	0	L	
12	40	1768	919	203·0	151·5	148·0	110	118	184	49	42	61	73	40	..	*	*	O	2	2	1	D–M	
14	26	1823	935	188·5	148·0	141·0	103	128	190	53	36	56	68	34	17	198	87	O	3	3	3	G–G	
16	38	1741	880	188·0	162·0	147·0	103	117	179	48	40	61	65	34	..	199	86	O	2	2	1	G–G	
17	22	1814	903	196·5	153·5	146·0	107	126	196	49	40	61	65	34	21	202	95	O	1	1	0	D–M	
18	35	1779	913	194·0	154·5	142·0	101	129	198	56	43	60	74	40	19	202	91	O	2	2	0	D–M	
19	23	1759	921	189·0	157·0	142·5	98	115	171	50	35	58	67	37	14	194	88	O	1	1	0	D–M	
20	42	1752	905	202·0	158·5	151·5	.....	129	190	57	40	60	63	32	17	194	87	O	1	1	0	D	

*Paralysed.

Appendix VIII

Particulars of Cree-White Breeds, Men (Aged 20 to 59 years)

Of these: 4 are from Fitzgerald, *See* Appendix III, Nos. 2, 8, 21, and 28.
3 " Chipewyan, *See* Appendix V, Nos. 5, 9, and 24.
1 is from McMurray, for data *See* below:

8 in all

Particulars of Cree-White Breeds, Men, at McMurray

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose		Mouth	Ear		Upper lip (length)	Hand		Blood group	Hair			Colour of eye	Remarks
										Height	Width		Length	Width		Length	Width		Moustache	Beard	Cheek		
AGED 20 TO 59 YEARS																							
4	41	1771	.....	202	159·5	152	104	129	200	53	43	60	65	35	19	192	85	O	2	1	0	D-M	

Appendix IX

Particulars of Boys (Various)

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose			Ear			Hand		Blood group	Hair			Colour of eye	Remarks
										Height	Width	Mouth (length)	Length	Width	Upper lip (length)	Length	Width		Moustache	Beard	Cheek		
AGED 10 TO 19 YEARS																							
Pure Chipewyan																							
9	10	1360	726	182·0	147·0	131·0	.....	108	156	49	32	54	..	..	..	145	69	....	..	..	..	.....	
10	10	1327	701	183·0	145·5	130·0	.....	106	156	43	31	53	..	..	..	146	67	....	..	..	..	D–Bl	
8	12	1381	728	179·0	146·0	125·0	.....	104	161	47	31	55	..	..	..	151	70	....	..	..	..	D	
2	14	1511	733	193·5	144·5	130·0	.....	117	178	49	31	54	..	..	..	168	78	....	..	..	..	D	
3(a)	15	1577	780	177·5	151·0	135·0	.....	112	169	47	31	50	..	..	..	172	76	....	..	..	..	D	
1	17	1669	831	186·0	159·0	139·0	.....	119	169	41	31	53	..	..	..	186	78	....	..	..	..	D–Bl	
57	18	1597	927	184·0	148·5	145·5	.....	122	177	51	34	59	..	..	..	190	86	....	..	..	..	D–Bl	
3(b)	19	1669	945	188·0	159·5	145·5	.....	124	182	52	37	60	..	..	..	190	89	O	..	..	..	D	
4	19	1700	954	185·0	148·5	148·0	.....	131	194	53	38	60	..	..	..	189	91	O	..	..	..	D–Bl	
Chipewyan-White Breeds																							
3	10	1282	694	179·0	148·0	126·0	.....	104	160	44	29	48	..	..	..	139	67	....	..	..	..	L	
7	10	1304	670	186·0	147·5	126·5	.....	102	155	47	29	50	..	..	..	143	65	....	..	..	..	D	
2	13	1503	780	180·0	147·0	131·5	.....	113	169	42	31	52	..	..	..	166	78	....	..	..	..	D–Bl	
22	13	1551	783	192·5	152·5	136·5	.....	110	176	47	34	56	..	..	..	177	77	....	..	..	..	D	
7	18	1749	895	191·5	150·0	136·0	.....	118	175	47	36	50	..	..	..	191	85	A	..	..	..	M–L	
11	18	1701	894	186·0	147·0	141·0	.....	119	171	49	38	55	..	..	..	185	86	B	..	..	..	M	
13	18	1847	921	189·0	145·0	134·0	.....	127	191	51	33	51	..	..	..	214	91	A	..	..	..	M	
21	18	1693	839	189·0	143·5	133·0	.....	125	178	47	37	59	..	..	..	190	89	....	..	..	..	D–M	
2	19	1725	.....	190·0	153·0	145·5	.....	121	174	47	39	55	..	..	..	191	91	B	..	..	..	D–M	
Pure Cree																							
25	15	1633	912	192·0	155·0	148·0	.....	129	191	57	35	54	..	..	..	187	89	O	..	..	..	D–Bl	
12	19	1690	956	192·5	154·0	148·0	.....	125	186	57	36	57	..	..	..	187	93	O	..	..	..	D	
Cree-White Breeds																							
6	11	1356	691	187·5	146·0	128·0	.....	105	153	46	32	48	..	..	..	154	69	....	..	..	..	D	
11	11	1404	758	180·5	145·0	126·0	.....	99	148	48	33	50	..	..	..	159	74	....	..	..	..	D–M	
5	12	1449	752	180·5	142·0	127·0	.....	107	161	50	33	51	..	..	..	160	67	....	..	..	..	D	
1	13	1487	751	185·5	152·0	133·0	.....	101	151	43	31	52	..	..	..	161	74	....	..	..	..	L	
4	14	1565	788	182·0	147·5	131·0	.....	116	168	51	31	50	..	..	..	175	75	....	..	..	..	D	

Appendix X

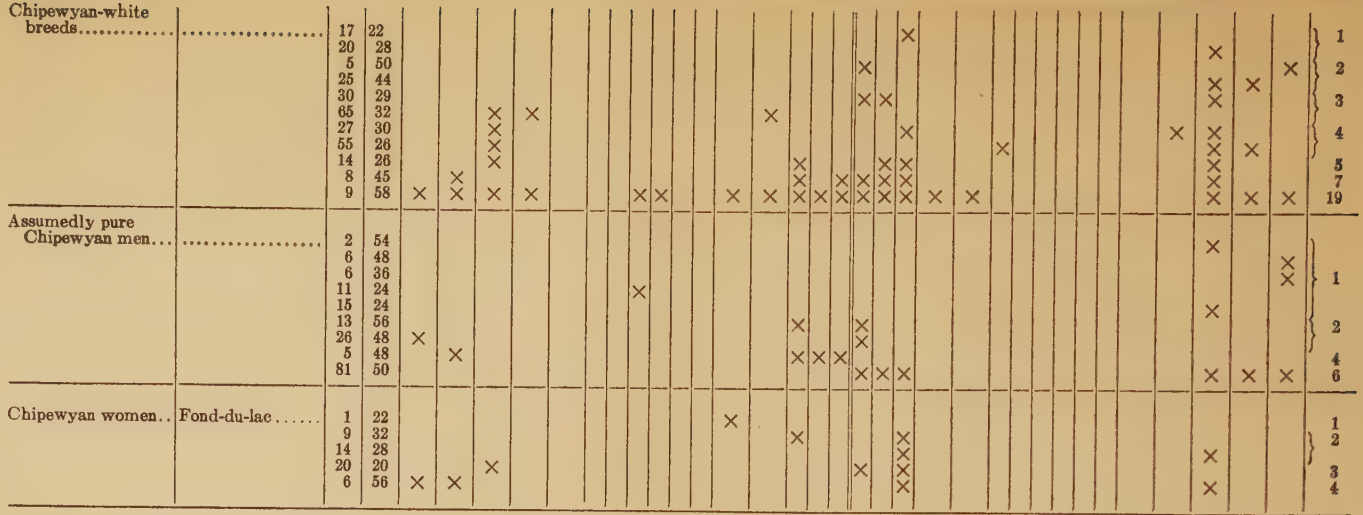
Particulars of Girls (Various)

Serial number	Age	Stature	Sitting height	Glabella ad maximum	Biparietal maximum	Bizygomatic maximum	Frontal minimum	Menton-nasion	Menton-crinion	Nose			Ear			Hand		Blood group	Hair			Colour of eye	Remarks
										Height	Width	Mouth (length)	Length	Width	Upper lip (length)	Length	Width		Moustache	Beard	Cheek		
Pure Chipewyan																							
27	11	1352	704	174·0	143·0	128·0	.....	98	152	42	29	49	..	..	..	153	65	....	..	..	..	Bl	
15	12	1497	780	186·0	144·5	133·5	.....	116	175	48	35	52	..	..	..	172	76	....	..	..	..	D–Bl	
13	13	1497	787	184·0	143·0	134·0	.....	116	173	50	31	58	..	..	..	158	71	....	..	..	..	D–Bl	
14	13	1510	787	178·0	145·5	133·0	.....	108	179	48	33	52	..	..	..	168	68	....	..	..	..	D–Bl	
1	18	1645	834	185·0	157·5	148·0	.....	118	183	54	31	58	..	..	..	189	87	....	..	..	..	D–Bl	
Chipewyan-White Breeds																							
16	11	1362	745	175·0	145·0	127·5	.....	109	164	46	32	51	..	..	..	150	70	....	..	..	..	D	
22	11	1467	744	179·0	148·0	128·0	.....	106	149	39	32	48	..	..	..	165	69	....	..	..	..	D	
23	11	1384	744	177·0	144·0	127·0	.....	99	157	46	31	47	..	..	..	153	69	....	..	..	..	D–M	
2	13	1533	822	178·5	156·0	137·0	.....	113	172	47	36	51	..	..	..	172	78	....	..	..	..	D	
10	15	1660	880	190·0	150·0	136·0	.....	114	174	51	35	53	..	..	..	169	80	....	..	..	..	D–M	
Chipewyan-Cree-White Breeds																							
28	12	1339	682	179·0	137·0	125·0	.....	102	158	44	32	47	..	..	..	156	70	....	..	..	..	D	
3	14	1571	817	177·0	148·0	132·0	.....	107	162	47	34	50	..	..	..	175	77	....	..	..	..	D	
Pure Cree																							
20	12	1464	775	186·5	151·0	137·0	.....	109	165	49	35	51	..	..	..	158	72	....	..	..	..	D–Bl	
21	12	1489	778	179·0	140·0	129·0	.....	113	154	45	34	49	..	..	..	167	72	....	..	..	..	D	
19	13	1479	807	180·0	147·0	135·0	.....	107	167	47	35	49	..	..	..	173	77	....	..	..	..	D	
Cree-White Breeds																							
17	11	1462	768	187·0	148·5	133·0	.....	114	174	49	32	46	..	..	..	165	68	....	..	..	..	D–Bl	
18	11	1402	729	176·0	134·0	122·5	.....	102	154	45	31	47	..	..	..	151	69	....	..	..	..	M–L	
26	11	1376	731	172·0	147·0	127·0	.....	108	159	49	30	44	..	..	..	149	63	....	..	..	..	D–M	
7	12	1399	725	178·5	140·0	123·0	.....	97	156	47	28	48	..	..	..	157	68	....	..	..	..	D–M	
24	12	.....	.....	173·0	139·0	129·0	.....	104	165	44	34	46	..	..	..	153	72	....	..	..	..	D–M	
12	13	1539	812	180·0	142·0	131·0	.....	114	174	51	37	52	..	..	..	172	77	....	..	..	..	D	
25	13	1368	736	177·0	145·5	127·0	.....	114	174	48	31	46	..	..	..	....	....	....	..	..	..	D	
5	14	1500	788	176·0	146·5	135·0	.....	106	162	48	36	51	..	..	..	169	72	....	..	..	..	D	
11	14	1548	806	176·0	150·0	128·0	.....	116	177	45	32	50	..	..	..	172	79	....	..	..	..	D–M	
9	15	1583	840	196·0	149·0	135·0	.....	114	181	45	39	54	..	..	..	183	83	....	..	..	..	M–L	
8	16	1678	867	180·0	147·0	134·5	.....	113	173	54	35	50	..	..	..	187	78	....	..	..	..	D–M	
6	17	1600	837	180·0	150·5	140·0	.....	116	180	52	32	48	..	..	..	184	80	....	..	..	..	D–M	
4	19	1514	834	179·0	144·0	136·5	.....	122	181	53	31	50	..	..	..	175	81	....	..	..	..	D	

Appendix XI

Distribution and Particulars of Carious Teeth

Tribe	Band	Serial number	Age	Upper																Lower												No. of carious teeth
				Right								Left								Right							Left						
				M 3	M 2	M 1	Pm 2	Pm 1	C	I 2	I 1	I 1	I 2	C	Pm 1	Pm 2	M 1	M 2	M 3	3	M 2	M 1	Pm 2	Pm 1	C	I 2	I 1	I 1	I 2	C	Pm 1	Pm 2	M 1	M 2	M 3	
Cree men	Chipewyan	6	50	×																												
		9	50																													
		24	30																													1
		33	24		×																×											
		5	45																													
		14	30																		×											2
		31	29																		×											
		7	36	×														×				×										3
		18	45				×													×												
		30	35																×		×											4
Cree old men	Chipewyan	15	16																													1
		3	64	×														×	×			×										4
		4	80	×	×	×	×	×										×	×		×											11
Chipewyan men	Fond-du-lac	55	26			×																										
		81	50																													4
																																6
Chipewyan men	Chipewyan	2	54																													
		6	48																													
		11	24								×																					1
		5	50																													
		9	58	×	×	×	×				×	×			×	×	×	×	×	×	×	×	×	×								2
																																19
Chipewyan old men	Chipewyan	1	63																													
		16	68																													1
		15	68	×													×	×	×	×	×	×										
																																8
Chipewyan men	Fitzgerald and Fort Smith	6	36																													
		15	24																													
		20	28																													1
		13	56														×		×													
		25	44																													
		26	48	×																												2
		30	29																×													
		3	38			×														×												3
		27	30			×															×											4
		8	?	×	×													×	×													
		28	26				×										×			×												5
																																6


Chipewyan-white breeds
Assumedly pure Chipewyan men
Chipewyan women
Fond-du-lac

Chipewyan Indians at Fond du Lac

Chipewyan Indians at Fond du Lac

Chipewyan Indians at Fond du Lac

Chipewyan Indians at Chipewyan

Chipewyan Indians at Chipewyan

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